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UNIVERSITY OF ALBERTA

CHILDREN'S COPING WITH VENIPUNCTURE

BY

MARILYN JEAN HODGINS

A THESIS SUBMITTED TO THE FACULTY OF
GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
MASTER OF NURSING

FACULTY OF NURSING

EDMONTON, ALBERTA
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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled **CHILDREN'S COPING WITH VENIPUNCTURE** submitted by Marilyn Jean Hodgins in partial fulfillment of the requirements for the DEGREE OF MASTER OF NURSING.

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DATE: April 16, 1993

Abstract

Little is known about children's coping with pain. Purposes of this study were to describe school-aged children's coping strategies, and to assess factors affecting coping and pain. Subjects were 47 girls and 39 boys (aged 5 to 13) attending an outpatient laboratory. They were interviewed before and after venipuncture, and observed during the procedure. Interviews were tape-recorded.

Variables and data collection tools were: expected and actual pain (Visual Analogue Scale), state anxiety (STAI-C), coping strategies (interview), and behaviour (Observational Scale of Behavioral Distress). Parents provided information about subjects' previous venipunctures, predicted needle fear, and strategies parents can use to help children with needles. Expected pain, anxiety, and potential coping strategies were assessed prior to venipuncture. Next, subjects' responses to venipuncture were observed and recorded. Following venipuncture, children reported pain and coping strategies.

36 coping strategies were identified and grouped into seven categories: DIVERTING ATTENTION, ALTERING THOUGHTS, SUBMITTING, SUPPORTING, TAKING PART, ACTIONS INVOLVING PARTICIPATION OF OTHERS, and CATASTROPHIZING. The first three categories were most commonly reported. Subject traits and pain were assessed to determine if there were differences in coping categories. Low frequencies precluded some categories from analyses.

Significant differences were observed in strategies used by girls compared to boys. Girls used more DIVERTING ATTENTION and SUPPORTING strategies. Children who used DIVERTING ATTENTION had significantly less pain than children who did not.

A strong positive correlation was observed between anxiety and expected pain. Age was not related to expected or experienced pain. Although boys and girls predicted the same pain intensity, girls experienced less pain.

This study indicates that children can identify and use strategies to cope with pain; some of their strategies have more potential for success than others. Girls, who preferred SUPPORTING strategies, may have derived support from involvement in the study; thereby, reducing their pain. In future research, the role of gender in coping should be investigated.

Research is also needed to validate the coping categories of this study. Validation should be undertaken with other pain-inducing procedures, and acute and chronic pain. As well, a longitudinal study is needed to examine changes in children's coping patterns following repeated exposure to pain.

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Completion of this study would have been impossible without the involvement of the children and parents. I appreciate the time taken by these individuals to share their thoughts and feelings with me. The insight and wisdom exhibited by the children was impressive. I trust that I have presented an honest account of their experience.

Special thanks is extended to my family, friends and colleagues who served as my cheering section throughout this process. I couldn't have done it without you.

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Children's Coping With Venipuncture

University of Alberta
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An essential component of many interventions aimed at health maintenance or restoration is the use of needles. Nonetheless, the execution of procedures such as venipunctures and injections is complicated by the pervasive fear of needles evident in our society (Broome, 1986; Fassler, 1985; Fowler-Kerry & Lander, 1991; McGrath & Craig, 1989; Ross & Ross, 1988). Frequently, a negative emotional response is evoked by the memory or anticipation of pain. Due to the unpleasant nature of pain, people typically react by initiating actions aimed at avoiding or stopping it. However this response must be tempered if the benefits derived from these procedures are to be attained. How people learn to cope with pain is not fully understood. Because learning to cope begins in childhood and endures into adulthood, research is needed which examines how children deal with the experience of pain.

Children are susceptible to the same pain-inducing situations as those experienced by adults. Pain may be experienced as an acute response to tissue injury, as a chronic condition felt long after the precipitating factor has resolved, or as an expected side effect of many medical procedures. The International Association for the Study of Pain (1979) defines pain as an "unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage" (p.250). Due to their maturing cognitive and motor skills, it is doubtful whether children perceive or respond to these events in the same way as adults (Lollar, Smits, & Patterson, 1982; Ryan, 1989).

Although sensory pain pathways are generally unaffected by the aging process (McGraw, 1941, cited in McGrath, 1990; Harkins, 1988), perception of and response to a noxious stimulus may change over time. This variation occurs because pain perception is influenced not only by the nature of the stimulus, but also by the emotions evoked by the situation and the meaning attached to it (Arnoff & Evans, 1987; Melzack & Casey, 1966; Melzack & Wall, 1988). Factors which may influence how the person in pain evaluates and responds to the situation include cognitive development, perceived ability to deal with pain, previous experience, psychosocial support, and other factors specific to the situation (Lazarus & Folkman, 1984; Lutz, 1986; Siegel & Smith, 1989; Walmsley, Brockopp, & Brockopp, 1992).

An emotion frequently linked with the experience of pain is anxiety. This unpleasant feeling of distress which occurs when a situation is perceived as threatening

(Miller, 1983) has been shown to heighten pain expectations in children and adults (Broome, 1986; Fowler-Kerry & Lander, 1991; Fradet, McGrath, Kay, Adams, & Luke, 1990; Kent, 1984; Lander, Hodgins, & Fowler-Kerry, 1992). However, despite popular belief, research has not established that the actual pain experienced is intensified by a high anxiety state (Arntz, Van Eck, & Heijman, 1990; Lander, Hodgins, & Fowler-Kerry, 1992).

An inverse relationship between anxiety and age has been suggested in relation to children's pain experiences (Fradet et al., 1990). Generally, it is assumed that young children are ill-prepared to deal with noxious stimuli due to their immature cognitive and psychomotor abilities. Children's inability to comprehend or circumvent the situation may increase their susceptibility to the experience of anxiety. Furthermore, adolescents' responses to pain may change due to their increasing awareness of the implications or consequences of the experience (Lavigne, Schulein, & Hahn, 1986; Miller, 1983).

Much of children's learning occurs within the family context (Craig, 1975). It has been suggested that gender differences in children's pain responses evolve as a result of learned sex-role behaviours or parental expectations (Lambert, 1984; Lutz, 1986; Trad & Greenbalt, 1990). For example, parents may inadvertently convey the attitude that, while it is acceptable for girls to express their anxiety regarding a pain-inducing situation, boys should quietly suffer.

Currently, little is known about the process of learning to cope with pain. Although a number of descriptive studies have examined coping with pain by adults (Chaves & Brown, 1987; Cohen & Lazarus, 1973; Scott & Clum, 1984; Suls & Wan, 1989; Turner & Clancy, 1986), there is a dearth of similar research about children. Knowledge about the impact of various factors on a child's ability to deal with pain is important in promoting the development of positive adaptive responses. Furthermore, without knowledge of how children cope, interventions aimed at assisting children to deal with the experience of pain may be ineffective or even detrimental.

Coping can be defined as how individuals think, feel and act when a threat to their physiological or psychological well-being is perceived (Garmezy & Masten, 1990; Geach, 1987). Coping responses are employed in an attempt to minimize the impact of the stressor, and their effectiveness can be determined by the outcome (Johnson & Lauver, 1989). Effective coping allows the individual to perceive some sense of control or mastery over the stress-provoking event. Conversely, ineffective coping generates feelings of anxiety, distress and loss of control which may precipitate the development of avoidance or delaying behaviours. A more extensive review of the literature regarding coping with pain is presented in Appendix A.

Currently, many of the hypotheses about children's coping with pain have been

inferred from children's responses to hypothetical situations or their response to stressors other than pain. The findings of these studies indicate that age is positively correlated with the number and type of coping strategies employed by children (Peterson, 1989). It has been suggested that younger children have fewer coping strategies in their repertoire which makes them more vulnerable to stressors that are beyond their control (Sharrer & Ryan-Wenger, 1991; Turkel & Spencer, 1990). Gender has also been linked with children's preferences for various coping strategies. Studies have suggested that girls are more likely to seek help in dealing with a stressor while boys attempt to "tough it out" (Dise-Lewis, 1988; Jeans, 1983; Lavigne et al., 1986; Ryan, 1989).

Although it has been stated that ineffective coping may generate feelings of anxiety, the converse may also be true in that anxiety may induce ineffective coping. Insofar as anxiety has been shown to heighten pain expectations in children and adults (Broome, 1986; Fradet et al., 1990; Kent, 1984; Lander, Hodgins, & Fowler-Kerry, 1992), it may also hinder one's attempts to cope. McGrath (1990) suggests that children's tolerance for a pain-inducing procedure may increase with repeated exposure to the nocuous stimulus; however, no longitudinal study has tested this hypothesis.

The effect of others on children's behaviour and ability to cope with a stressful situation is not known. Although children generally report that the presence of a parent helps them to deal with stressful situations, controversy exists regarding the actual effect that parental presence has on the child's behaviour (Bauchner, 1991; Jacobsen, Manne, Gorfinkle, & Schorr, 1990; Lutz, 1986). Although little research has been conducted to evaluate the effect of the health care provider, Lander, Fowler-Kerry, and Oberle (1992) found that the phlebotomist was not a predictor of the pain experienced by children during a venipuncture.

Several studies have attempted to promote children's coping abilities by implementing distress-reducing strategies initiated by health professionals or parents (Faust, Olson, & Rodriguez, 1991; Fowler-Kerry, 1986; Harrison, 1991; Kuttner, 1988). Few studies, however, have specifically addressed the issue of how children learn to cope with pain. Attempts have been made to study children's coping ability by examining their appraisal and response to hypothetical situations or their memories of past events (Brown, O'Keefe, Sanders, & Baker, 1986; Compas, Malcarne, & Fondacaro, 1988; Rossman, 1992; Ryan, 1989; Sorenson, 1990; Tesler, Wegner, Savedra, Gibbons, & Ward, 1981). However the generalizability of these findings to real life or imminent stressors is not known.

Limitations of studies which have specifically examined children's reaction to pain-inducing situations include the use of tools designed for adults and reliance on secondary informants, such as parents or health care providers, for collection of data

about the child's coping or distress. Although a relationship has been observed between children's anxiety and parents' reports of their child's distress (Fradet et al., 1990; Harrison, 1991), pain and the emotions generated by it are subjective experiences. Therefore, self-reporting is a more appropriate means of measurement. Research has shown that the majority of children seven years of age and older exhibit few physical signs of distress (Hubert, Jay, Saltoun, & Hayes, 1988; Jay, Ozolins, Elliott, & Caldwell, 1983) which suggests that observations of their overt behaviour may not be a valid indicator of coping. Furthermore, because many coping strategies are essentially mental operations, they are not amenable to observation.

As mentioned, research tools developed for adults are not necessarily suitable for children. Consideration must be given to the maturational changes which occur in children's cognitive processes and language skills when selecting tools and designing interventions. Venipunctures have been identified as a suitable vehicle for investigating issues concerning children's pain (Lander, Fowler-Kerry, & Oberle, 1992). Currently several valid and reliable instruments, for use with children five years of age and older, are available for the measurement of pain and the emotions associated with it.

The Visual Analogue Scale (VAS) has gained increasing popularity in the assessment of adults and children's pain. This tool consists of a 100 millimetre straight line, the ends of which are labelled as the extreme borders of the sensation being measured. The VAS has been reported to be a valid and sensitive measure of subjective pain (Chapman, Casey, Dubner, Foley, Gracely, & Reading, 1985; Huskisson, 1983; Gift, 1989). Research has established that children, five years of age and older, are able to comprehend and use this simple instrument (Chapman et al., 1985).

The State-Trait Anxiety Inventory for Children (STAI-C) is a simple but credible tool for measuring children's anxiety. This instrument consists of two 20 item self-report measures which assess State (transitory) and Trait (dispositional) anxiety. Using a three point Likert scale, children disclose their feelings in terms of descriptors such as happy, sad, nervous and terrified. The tool which has been successfully employed with children as young as 5 years of age has demonstrated construct, concurrent, and discriminant validity as well as internal consistency and test-retest reliability (Finch & McIntosh, 1990; Papay & Spielberger, 1986).

Although controversy exists regarding the validity of behavioral observation tools in assessing children's distress, several tools are currently available (McGrath, 1990). For example, the Observational Scale of Behavioral Distress (OSBD) was developed by Jay and Elliott (1986) to measure children's behavioral response to painful medical procedures. This tool which provides a weighted score for eight behaviours (i.e, information seeking, crying, screaming, physical restraint, verbal resistance, seeking

emotional support, verbal pain, and flailing) observed during various phases of the procedure. The OSBD has been utilized in the recording of children's distress during lumbar punctures and bone marrow aspirations (Elliott, Jay, & Woody, 1987). Significant correlations have been reported between scores on the OSBD and other measures of children's distress, such as anticipated pain, heart rate, blood pressure, and nurse ratings (Elliott et al., 1987).

Currently, no tool exists which measures children's self-reported coping abilities. The absence of such a tool handicaps researchers who wish to study children's coping. The merits of projective techniques as a means of facilitating children's verbalization of subjective topics has received some attention (Nicassio, 1984; Ross & Ross, 1988; Lollar et al., 1982). These techniques incorporate activities that most children find enjoyable and familiar such as using their imagination to tell a story or describe what something looks like (Rabin & Haworth, 1960). Although the preliminary findings are encouraging, further research is needed to establish the validity and reliability of pictorial tools (Nicassio, 1984; Lollar et al., 1982). A problem identified with the use of these tools is the potential for bias due to the gender, age or culture of the characters portrayed. Nonetheless, such tools may be useful in eliciting younger children's thoughts and feelings regarding stressful situations.

In addition to a description of children's coping strategies, research is needed about the characteristics of children who attain control while confronting a pain-inducing medical procedure. Research is also needed about the effect of coping on children's pain. Currently, knowledge is lacking to explain whether children's ability to cope with pain is merely a product of their maturing cognitive processes or if it is affected by factors such as past experience, gender, parental assistance, pain expectations and anxiety.

In summary, there are adequate tools for assessing children's pain and anxiety. There is no tool, however, for assessing children's coping. This deficiency exists, primarily, because an inventory of children's coping strategies has not been made.

The purposes of this study were (1) to describe the coping strategies generated and used by school-age children during a venipuncture for laboratory blood tests and (2) to assess factors which may affect the coping abilities and pain perceptions of children.

Method

Design and Variables

A descriptive design was employed in this study. Three dimensions of the children's experience with venipuncture for blood collection were examined: expected and actual pain, anxiety induced by the procedure, and coping strategies generated and used. Subjects' age, gender, and past experience with venipuncture were recorded as were parents' assessments of needle fear and strategies for coping.

Research Questions

There were six primary research questions and one secondary research question addressed in this study.

Primary.

1. What type and number of strategies do school-age children generate as ways to cope with an impending venipuncture.
2. Is age related to the number of coping strategies generated by children.
3. Is gender related to the type of coping strategies generated and used by children.
4. Is there a relationship between the type of coping strategies generated by the children prior to the venipuncture, and the type of strategies reported as actually used during the procedure.
5. Do age, gender, state anxiety, previous experience with venipuncture, or type of coping strategies used, affect the children's reports of actual pain experienced.
6. Do strategies generated by parents to help children cope with venipuncture relate to children's perceptions of helping strategies that parent's can use for a hypothetical child.

Secondary.

7. Is there a relationship between parents' perceptions of their child's fear of the upcoming venipuncture, and children's anxiety.

Subjects

Subjects were obtained through a convenience sampling of children, 5 to 13 years, who were attending an outpatient laboratory. Criteria for subject selection included that the child: require a venipuncture for blood collection, have a parent or legal guardian present to provide consent, be English-speaking, have cognitive development appropriate

for age, be willing to participate in the study, and not have participated in the study previously. Children were to be sampled so that there was approximately equal representation of boys and girls as well as younger and older children in the sample.

Instruments

Visual Analogue Scale (VAS). A 100 millimetre vertical visual analogue scale (VAS) was used to assess expected and actual pain intensity. For this study, the anchors of the VAS were described as "no pain" and "worst pain possible". Children's ability to use the tool was evaluated using the method outlined by Fowler-Kerry and Lander (1991). After being instructed on the use of the tool, children were asked to place three marks on the VAS to indicate the pain exhibited by three randomly presented pain faces. A horizontal VAS with the anchors of "no fear" and "worst fear possible" was also used for the measurement of parents' assessment of their child's fear of the blood collection.

State-Trait Anxiety Inventory for Children (STAI-C). The State portion of the State-Trait Anxiety Inventory for Children (STAI-C) (Papay & Spielberger, 1986) was employed to measure children's anxiety regarding the impending blood collection. Scores on this portion of the STAI-C could range from 20 to 60.

Observational Scale of Behavioral Distress (OSBD). The Observational Scale of Behavioral Distress (OSBD) (Jay & Elliott, 1986) was employed to measure the children's behavioral response to the blood collection. For this study, scores on the OSBD could range from 0 to 94.

Projecting-Children's Emotions About Needles (P-CEAN). An illustration of a gender-neutral, school-age child standing in the doorway of a blood-collection room was developed for this study. A rear view of the child's body was portrayed. The layout of the room which the child was poised to enter was similar to that of the clinic used for the study. The supplies utilized for blood collections (e.g., blood tubes, tourniquet, phlebotomy chair, person wearing a lab coat) were illustrated (Figure 1).

A pilot study was conducted to evaluate whether the P-CEAN accomplished its intended purpose. Six school-aged children (4 boys and 2 girls) were asked to interpret what was happening in the picture and to ascribe a gender to the P-CEAN child. All the children recognized the impending blood collection. Four children (3 boys and 1 girl) named the P-CEAN child as a boy, while the others (1 boy and 1 girl) attached a female label.

Figure 1

P-CEAN Illustration

Setting

The study was conducted in a free-standing, outpatient laboratory clinic located in a large metropolitan community in western Canada. Physicians, including six paediatricians, referred their patients to this laboratory facility.

The clinic incorporates an open-concept design. Although this design expedites the movement of the laboratory personnel and specimens, it also supports the transmission of sights and sounds. Blood collection is routinely performed in an open area directly off the waiting room. This area consists of two small cubicles which face each other. Each cubicle contains a phlebotomy chair and a small table with all the necessary supplies for blood collection. A small separate room which contains an examination table is frequently used for specimen collections on infants and toddlers, or others who indicate a desire to lie down during the procedure.

Clients are processed on a first-come, first-served basis. The typical staffing pattern in the clinic is two laboratory technologists and two laboratory assistants, one of whom acts as the receptionist. For convenience, the staff will be referred to as phlebotomists regardless of their proper role designation.

Procedure

There were three phases associated with the study: pre-venipuncture, venipuncture, and post-venipuncture (see Table 1).

Pre-Venipuncture Phase. The initial contact with the parent and child was made while they waited in the waiting room. After introductions were made and the purpose of the study was briefly discussed, the parent and child were taken to a small private room located at the back of the clinic. The room which contained a desk and three chairs provided privacy and helped reduce the number of distractions. The parent was seated at the chair by the desk, while the child was seated in one of the remaining chairs. An informed consent was obtained from both the child and parent/legal guardian prior to their participation in the study (Appendix B).

After the 20 items on the STAI-C were read out to the subject, a semi-structured interview was conducted (Appendix C). Various probes were used during the interview to ensure that subjects understood what was being asked, and to give them an opportunity to fully verbalized their thoughts. The initial interview took approximately ten minutes and was tape recorded.

During this interview, the subject was shown the P-CEAN and asked to describe what was happening. Regardless of the interpretation generated, the subject was

Table 1: Three Phases of This Study

PRE-VENIPUNCTURE
* Child's self-reported anxiety * What is happening in P-CEAN picture? * How does P-CEAN child feel about blood test? * How much pain would P-CEAN child experience? * What could P-CEAN child do to reduce pain? * How much pain will you experience? * What will you do to reduce pain?

VENIPUNCTURE
* Observational Scale of Behavioral Distress * Field notes of child's behaviour

POST-VENIPUNCTURE
* Was it better/worse than you thought? * How much pain did you experience? * What did you do that helped? * Easier/harder next time? * Advice for friend having blood test?

eventually informed that the P-CEAN child was going to have a blood test. The P-CEAN child was referred to in gender-neutral terms until the subject mentioned a gender. To evaluate the subject's knowledge of the procedure, he/she was asked to describe how a blood test is done. Subsequent questions were asked to explore more subjective issues such as how the child might be feeling, amount of pain the child would experience, and what strategies might help reduce the pain experienced by the child. The subject was asked not only to generate strategies that the child could initiate, but also to suggest things that the parent and health provider (i.e., the lady in the picture) might do to help the child. Next, the subject was asked to report expected pain on the VAS for him/herself and to describe preferred coping strategies.

While the semi-structured interview was being conducted with the child, the parent was asked to complete a short questionnaire (Appendix D). The parent provided information about the child's age, health history and previous experience with venipunctures. The parent was asked to indicate how fearful the child was about the upcoming procedure. The parent was also asked to generate two or three strategies that any parent might use to assist a child who is worried about having blood work done, and to describe any specific advice given to the child prior to this clinic visit.

Venipuncture Phase. Following the initial interview, the subject was introduced to the phlebotomist and the procedure was completed. During the venipuncture, the subject's behaviour was observed and the OSBD was completed. For completion of the OSBD, the procedure was observed in terms of four intervals: preparation, needle insertion, collection of specimen, and needle removal. Generally, only one measure of the subject's behaviour was recorded during each of the phases. However when unanticipated delays occurred due to the actions of the subject or phlebotomist, repeat measures were taken and the combined scores were averaged.

Field notes were made of the subject's response to the procedure, parent-subject-phlebotomist interactions, and other relevant factors about the venipuncture (e.g., difficulty with specimen collection, other activities occurring simultaneously in the clinic).

Post-Venipuncture Phase. Following the blood collection, the subject returned to the interview room. The parent was invited to be present during this debriefing. The subject was asked to evaluate whether the blood test was better or worse than he/she had anticipated, and then to report the actual pain experienced, using a VAS. Two questions were asked to determine the coping strategies used by the subject. Initially, the subject was asked to report what he/she did during the blood test that helped. Then, the subject

was asked to describe the advice that he/she would give to a friend who was having this procedure. Questions were also asked regarding the assistance provided by the phlebotomist and parent. Finally, the subject was asked to predict whether future blood tests would be easier or harder (Appendix E).

Results

Data Preparation

State Trait Anxiety Inventory for Children. Accurate anxiety scores could not be tallied for eight subjects (4 boys and 4 girls) who did not answer more than three items on the STAI-C. Therefore, the missing anxiety measures were substituted with predicted scores from a regression equation (Tabachnick & Fidell, 1989). The regression equation was computed with data obtained from the 78 remaining subjects for the following variables: child's age, gender, expected pain, actual pain, and parent's estimate of child's fear.[1] The predicted STAI-C values were used for these eight subjects in all subsequent analyses involving anxiety.

Coping Strategies. The transcribed audio-recorded interviews were coded with assistance of the ethnography computer software program. Responses were analyzed to identify type of coping strategies generated by subjects. By a repetitive process in which the subjects' responses were reviewed and compared, labels (subcategories) were constructed which were descriptive of the various coping strategies generated and used. These labels were delineated and defined until they were mutually-exclusive. Once the labels were clearly formulated, the coping strategies were grouped into major categories reflective of the predominant behavioral or cognitive process involved. Parents' answers to the two open-ended questions were coded and categorized using the same process as that used for the children's responses.

To assess the reliability of the coding process, all the original transcripts were recoded according to the master coding scheme. Any discrepancies in coding were reviewed and revised to best reflect the intent of the respondent.

Based on all the responses generated by the children and parents, 36 coping

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[1] This regression equation was: Anxiety = 29.290 + (.038 x pain experienced) + (-.002 X age) + (-.465 X gender) + (.079 X parent's estimate of child's fear) + (.091 X expected pain).

strategies were identified. These strategies were grouped into seven categories. Although considerable overlap was observed between the strategies generated by the children and those given by parents, some differences were noted. For example, the strategies of *escaping, anesthestizing, crying,* and *seeking a saviour* were generated only by children. Whereas, *legitimizing feelings, censoring, giving personal information,* and *informing honestly* represent parent-generated strategies. Consequently, two taxonomies were created: one representing the children's responses and one for the responses generated by parents. The categories with their constituent coping strategies for the children's responses are found in Table 2. Appendix F contains the taxonomy generated from the parents' comments.

Coping strategies were numerically coded in three ways. Numeric values were assigned to each coping strategy and they were recorded in the data set. Second, the total number of coping strategies generated by a subject was recorded. Third, codes were assigned for whether or not the subject had mentioned each of the seven categories.

Handling of Other Missing Data. One child demonstrated a lack of proficiency in the use of the VAS. Even after the instructions were reinforced by the researcher and parent, this 5 year old (67 months) girl ranked the three pain faces in reverse order. This child's pain scores were excluded from the analyses. Nonetheless, no problems were detected in her ability to complete the other components of the study.

During data analysis, it was discovered that one subject's measure for the actual pain experienced had been misplaced. To prevent the loss of this subject for subsequent analyses, her missing score was replaced with the mean score of her gender and age group (Tabachnick & Fidell, 1989).

Characteristics of Sample

Because data collection occurred from June through August, 1992, client volumes fluctuated according to the holiday schedules of the physicians. Although client visits were sporadic, peak hours of operation were typically in the late morning and mid-afternoon. During these times, the waiting room was often overcrowded with standing room only.

Non-Participants. Ninety-eight children, 52 girls and 46 boys, were approached to participate in the study. Of them, six (6.1%) children did not participate. In three of the cases, the parent refused to sanction the child's involvement. Two of these parents (children: 10 and 11 year old boys) identified time-constraints as the mediating factor. The third parent stated that any discussion of the procedure or delay in its execution

Table 2

Categories and Subcategories of Children's Coping

CATEGORIES	SUBCATEGORIES
SUPPORTING **Involves seeking comfort or support. Most often the mother identified as supportive person.**	Wanting Someone There. Perceiving presence of another as helpful. No physical contact is involved. Seeking Physical Contact. Seeking support through physical contact or touch. Seeking Other Comfort Source Seeking support through a non-human source. Examples include God, teddy bear or toys. Seeking Calming Through Words. Perceiving that soothing words spoken by significant other will help.

Table 2 cont'd

CATEGORY	SUBCATEGORY
ALTERING THOUGHTS **Involves altering thoughts about the procedure.**	Thinking Something Else. Focusing thoughts on other things, usually something pleasant. Minimizing. Minimizing negative aspects of procedure such as amount of pain experienced or duration of procedure. Not Thinking. Stopping or blocking all thoughts about the procedure. Positive Self Talk. Talking to oneself to inspire optimism about ability to cope with the procedure. Imagery. Transforming a perceived negative aspect of the procedure to something harmless. Examples include thinking of the needle as a spoon or someone pinching.

Table 2 cont'd

CATEGORY	SUBCATEGORY
DIVERTING ATTENTION **Involves using activities to distract attention from procedure.**	Breathing. Altering normal breathing pattern in some way such as holding breath and deep breathing. Reciting. Repeating some sequence of numbers, words, or letters. Reading. Concentrating on a book or other type of script. Talking. Communicating verbally with others. Moving. Performing some type of physical activity such as squeezing something, curling toes, and making a fist. Not Looking. Blocking the view of the procedure.

Table 2 cont'd

CATEGORY	SUBCATEGORY
TAKING PART **Involves taking an active role in the procedure.**	Watching. Watching the procedure being completed. Learning Why. Seeking information about why procedure must be done. Learning How. Seeking information regarding how procedure is done. Controlling. Exerting control over the procedure such as choosing arm for venipuncture.

Table 2 cont'd

CATEGORY	SUBCATEGORY
SUBMITTING **Involves submitting passively to the procedure and being cooperative.**	Not Moving. Remaining immobile. Doing As Told. Doing as instructed by health provider or parent. Grinning & Bearing It. Toughing it out. No specific strategies or actions are identified. Vague phrases such as "don't worry", "be calm" or "relax" are given. Perceiving No Problem. Submitting to procedure without complaint because situation not viewed as stressful.

Table 2 cont'd

CATEGORY	SUBCATEGORY
CATASTROPHIZING **Involves the belief that nothing can be to lessen the pain experienced. Differs from SUBMITTING due to underlying tone of despair.**	Escaping. Fleeing from the situation. Anesthetizing. Wanting to be anesthetized to eliminate any pain. Nothing Helps. Believing that nothing can help avoid pain. Crying. Crying during the procedure.

Table 2 cont'd

CATEGORY	SUBCATEGORY
ACTIONS INVOLVING PARTICIPATION OF OTHERS **Involves having others intervene or assist (i.e., health care personnel or parent).**	Seeking Reward. Asking for a reward for undergoing procedure. Seeking a Saviour. Seeking someone to intervene in order to prevent completion of the procedure. Seeking Healing Measures. Seeking pain relief through measures such as application of a bandaid or administration of medications (e.g., Tylenol). Seeking Friendly Interaction. Perceiving the manner of others as a factor in reducing pain and distress. Seeking Clinical Proficiency. Perceiving that technique will influence the pain and distress experienced. Explanations included elements of reality or magical thoughts.

would unnecessarily increase her 5 year old daughter's anxiety. In addition, three children refused to participate in the study even though their parents gave consent. These three children were all girls and seven years of age.

Participants. The remaining 92 children (48 girls and 44 boys) were entered into the study. Interviews were conducted on an one-to-one basis except for three sibling pairs (two sets of brothers, and one brother and sister pair). To accommodate time-constraints plus the children's mutual desire to participate in the study, these siblings were interviewed simultaneously. However, to maintain independence among measures, the responses generated by these sibling dyads were excluded from the data analysis.

When the sibling dyads were excluded, the data collected from 86 children (47 females and 39 males) were available for analysis (Table 3). The mean age of the sample was 9 years 2 months (SD=27.5) with a range of 4 years 10 months to 13 years 4 months. Reasons given for the blood collection included routine component of a periodic health assessment (37.2%, n=32), initial assessment or re-evaluation of an acute condition (34.9%, n=30), and monitoring of a chronic health problem (27.9%, n=24). Seven (8.1%) parents reported that their child was unaware of the upcoming blood collection, while three others were not sure if their child knew.

Although 18.6% (n=16) of the sample had no previous experience with a venipuncture for blood collection, the majority of children (39.5%, n=34) had between 1 and 3 previous venipunctures. However, several parents commented that their child was only an infant or toddler when these previous venipunctures were performed. Number of previous venipunctures was positively related to age (Spearman: r=.31, p=.002). Chi-square analysis revealed no significant gender differences in the number of previous venipunctures experienced by the children.

Eighty-six percent (n=74) of the children in the study were accompanied to the laboratory by their mother or a female guardian. Fathers were in attendance in 14% (n=12) of the cases. The blood collections were performed by 11 female phlebotomists. However, 82.6% (n=71) of the procedures were completed by four phlebotomists.

Anxiety. Scores for the STAI-C ranged from 20 to 54. The mean STAI-C score for the sample was 35.4 (SD=4.7). No significant gender differences were observed in the children's anxiety on the basis of analysis of variance. Anxiety and age were negatively correlated (r=-.25, p=.05, 2-tailed test) such that younger children tended to be more anxious.

A strong positive relationship occurred between the subjects' anxiety and parents' prediction of subject's fear (r=.80, p=.01, 2-tailed test; Research Question 7). The

Table 3

Characteristics of Sample: Participants and Non-Participants

CHARACTERISTIC	GROUP Included	Excluded
Gender:		
- Girls	47 (54.7%)	1
- Boys	39 (45.3%)	5
Age: (months)		
- Mean	9 yrs 2 mos	10 yrs 3 mos
- SD	27.5	18.9
Reason for Test		
-health assess	32 (37.2%)	3
-acute illness	30 (34.9%)	0
-chronic condition	24 (27.9%)	3
Past Experience with Venipuncture		
- first time	16 (18.6%)	0
- 1 to 3	34 (39.5%)	3
- 4 to 10	22 (25.6%)	0
- >10	12 (14.0%)	3
- missing data	2 (2.3%)	0
Child Aware of Venipuncture		
- Yes	76 (88.4%)	6
- No	7 (8.1%)	0
- Unsure	3 (3.5%)	0
Cases Done by Phlebotomist		
- #1	38 (44.2%)	
- #2	17 (19.8%)	
- #3	10 (11.6%)	
- #4	6 (7.0%)	
- #5-11	15 (17.4%)	

mean score for parents' prediction of fear was 40.8 (SD=29.2). A modest, negative relationship was observed between parents' prediction of fear and subjects' age (r=-.24, p=.05, 2-tailed test). Hence, parents of younger children perceived their child to be more anxious.

The Child in the P-CEAN

Perceptions About Portrayed Event. When asked what was happening in the picture, the majority of subjects (73.3%, n=63) mentioned a needle or blood test (Table 4). Eight subjects (2 girls and 6 boys) refused to offer an explanation or stated they didn't know. The mean age of these subjects was 6 years 6 months (SD=16.8). Three subjects generated non-health care related responses such as "she is playing with matches" and "she is cooking dinner" (Mean age=6 years 9 months, SD=11.5). Although the matter of emotions was not introduced with this question, eight subjects (5 girls and 3 boys) (9.3%) specifically addressed how the child was feeling. Appendix G contains examples of the subjects' responses.

Perceived Gender of P-CEAN Child. The P-CEAN child was identified as a boy by 52.3% (n=45) of the male and female subjects. Twenty-five (29.1%) subjects referred to the child in terms of the opposite sex (e.g., a girl identified P-CEAN child as a boy). The remaining subjects (n=61) attached same sex, both sexes, or no labels (Table 5). Twenty-two of the 25 subjects who labelled the child as the opposite sex were girls.

Perceptions About Blood Test Procedure. After being informed that the P-CEAN child would be having a blood test, subjects expressed their views about this procedure. Eleven of the 86 subjects (12.8%) could not or would not describe how a blood test is done. The mean age of these subjects was 7 years 2 months (SD=17.8). Others provided inaccurate details about a blood test:

> They put some kind of thing around your arm. And there is a thing that you pump up and it shows how much blood you have.
>
> (Girl, 5 years old)

The involvement of a needle was identified by most subjects (81.3%, n=61) who offered an explanation of how a blood test is performed. Ten subjects (13.3%) used medical or technical terminology in their explanation (e.g., vein, microscope, cholesterol,

Table 4

Children's Interpretation of P-CEAN

INTERPRETATION	FREQUENCY	PERCENTAGE OF n
Needle or Blood Test	63	73.3%
General Health Care	10	11.6%
Non Health Related	3	3.5%
Emotions	8	9.3%
Don't Know	8	9.3%
TOTAL	92	

* n=86 but some children gave more than one response.

Table 5

Frequencies of Gender Ascribed to P-CEAN Child by Subjects' Sex

	GENDER ASCRIBED				
SUBJECTS' SEX	Same Sex	Opposite Sex	Either Sex	Not Stated	TOTAL
Girls	12	22	5	8	47
Boys	23	3	2	11	39
TOTAL	35	25	7	19	86

injection, vacuum). Appendix H presents some examples of the responses received.

Perceptions About Purpose of a Blood Test. About one-quarter (24.4%, n=21) of the subjects did not offer an explanation for the purpose of blood tests. The mean age of these subjects was 7 years 8 months (SD=23.2). Medical terms (e.g., virus, disease, germs, cholesterol, sed. rate) were included in the explanations offered by 11 subjects. Four subjects specifically identified the reason for their own blood test. Examples of the responses offered by the subjects are presented in Appendix I.

Perceptions About P-CEAN Child's Experience. When asked how the P-CEAN child might be feeling about the blood test, the majority of subjects (82.4%, n=70) expressed negative emotions such as nervous, scared, terrible, not good, angry, and sad.

Sixty-five comments were made by 58 subjects to explain the negative emotions evoked by the experience. These comments formed three general themes: needle (30.8%, n=20), the unknown (26.2%, n=17), and pain (40.0%, n=26) (Table 7). Examples of the responses given by the subjects are presented in Appendix J. Although pain was the most common negative factor identified, many of the subjects expressed some uncertainty regarding its occurrence (e.g., "it might hurt" as opposed to "it will hurt"). Furthermore, two children explicitly stated that the blood test "would not hurt". Although the needle was the second most popular factor cited by the children, it was not apparent whether the problem was the sight of the needle, itself, or the pain associated with it.

Several of the subjects suggested that past experience was an important factor in relation to the feelings evoked by a blood test.

> Scared. I don't know, maybe if he's had one before he might not be scared, but if he hasn't he would be scared.
>
> (Girl, 9 years old)

View of Children About Coping

Coping of P-CEAN Child. As mentioned, 36 coping strategies were generated and these were grouped into seven categories (Research Question 1). The mean number of strategies generated by subjects in relation to coping strategies that the P-CEAN child could use was 1.8 (SD=1.3). Seventy-one subjects generated 156 strategies that the P-CEAN child could use to reduce pain from the blood collection. The mean age of the 15 subjects who did not know what the P-CEAN child could do to reduce the pain experienced was 7 years 4 months (SD=21.9).

The four top ranked categories were: DIVERTING ATTENTION (n=58, 37.2%), ALTERING THOUGHTS (n=52, 33.3%), SUBMITTING (n=24, 15.4%) and SUPPORTING (n=16, 10.3%) (Table 6). The subcategories of *Not looking*, *Thinking Something Else*, *Grinning & Bearing It*, and *Not Thinking* were most frequently generated by the subjects. Examples of the responses given by the children are presented in Appendix K.

A significant positive relationship was observed between age and the number of coping strategies generated by the subjects (Spearman: r=.35, p<.001; Research Question 2). No gender differences in number of coping strategies identified were observed with analysis of variance.

The seven coping categories were examined to determine if there were differences in choices for boys and girls (Research Question 3). A significant gender difference was observed in choice of the coping category SUBMITTING (chi-square test=5.04, df=1, p=.02). More boys, than expected, generated this category for use by the P-CEAN child. No differences were observed for SUPPORTING, DIVERTING ATTENTION, ALTERING THOUGHTS, or TAKING PART responses. Categories of CASTROPHIZING and ACTIONS INVOLVING PARTICIPATION OF OTHERS could not be examined for gender differences owing to very small frequencies.

As mentioned, not every subject perceived the gender of the P-CEAN child to be the same as him or herself. Therefore, the perceived gender of the P-CEAN child (i.e., boy or girl) was examined to determine if it was related to type of coping strategies generated (with chi-square analysis). No significant differences were found for SUPPORTING, DIVERTING ATTENTION, ALTERING THOUGHTS, or TAKING PART in response to P-CEAN child's assigned gender.

Predicted Coping Strategies for Self-Use. Subjects provided a mean of 1.5 strategies (SD=1.0) that they could use during the blood collection. Mean age of those who did not know how to reduce their own pain was 8 years 0 months (n=14, SD=28.7). One hundred and twenty-four self-coping strategies were generated by the remaining 70 subjects (42 girls and 28 boys) (Appendix L). Age was positively related to number of self-coping strategies generated (Spearman: r=.31, p=.002; Research Question 2). There was no difference in the number of self-coping strategies generated by boys and girls.

Self-coping categories were ranked by frequency of choice. The four top-ranked categories were: DIVERTING ATTENTION (n=41, 33.1%), ALTERING THOUGHTS (n=29, 23.4%), SUBMITTING (n=25, 20.2%) and SUPPORTING (n=16, 12.9%) (Table 6). More girls, than expected, gave SUPPORTING strategies (chi-square

Table 6

Frequencies for Type of Strategies Generated By Subjects for:
P-CEAN Child's Use, Proposed Self Use, Reported Used, and Advice for Friend

	STRATEGIES			
TYPE OF STRATEGY	P-CEAN CHILD	PROPOSED SELF USE	REPORTED AS USED	ADVICE FOR FRIEND
SUPPORTING	16 (10.3%)	16 (12.9%)	11 (8.5%)	20 (10.2%)
DIVERTING ATTENTION	58 (37.2%)	41 (33.1%)	65 (50.0%)	55 (27.9%)
ALTERING THOUGHTS	52 (33.3%)	29 (23.4%)	21 (16.2%)	57 (28.9%)
TAKING PART	3 (1.9%)	8 (6.5%)	14 (10.8%)	21 (10.7%)
SUBMITTING	24 (15.4%)	25 (20.2%)	15 (11.5%)	38 (19.3%)
ACTIONS INVOLVING OTHERS	-	1 (0.8%)	-	4 (2.0%)
CATASTROPHIZING	3 (1.9%)	4 (3.2%)	4 (3.1%)	2 (1.0%)
DON'T KNOW/ UNABLE TO CODE	(16)	(14)	(10)	(8)
TOTAL (excluding Don't Know)	156 (100.0%)	124 (100.1%)	130 (100.1%)	197 (100.0%)

Percentages may vary due to rounding

test=5.53, df=1, p=.02). No significant gender differences were observed for the categories of DIVERTING ATTENTION, ALTERING THOUGHTS or SUBMITTING (Research Question 3). The categories of CASTROPHIZING, TAKING PART, and ACTIONS INVOLVING OTHERS could not be analyzed as few subjects identified these strategies.

Parent's Role in Coping. The mean number of parent-initiated strategies identified by subjects was 1.4 (SD=1.0). Thirteen subjects (10 boys and 3 girls) were unable to generate a response for what a parent could do to assist the P-CEAN child (Mean age=8 years 3 months, SD=29.2).

One hundred and twenty responses were generated by the remaining 72 subjects (43 girls and 29 boys) (Appendix M). SUPPORTING (n=55, 45.8%), DIVERTING ATTENTION (n=32, 26.7%) and ALTERING THOUGHTS (n=15, 12.5%) were the most frequently cited categories(Table 7). *Seeking (Giving) Physical Contact*, *Talking*, and *Minimizing* were the most popular coping strategies identified within these respective categories.

Health Provider's Role in Coping. The mean number of strategies given by the subjects about how the health provider could help the P-CEAN child was 1.1 (SD=0.9). Twenty-two subjects (Mean age=7 years 8 months, SD=25.5) did not know what the health provider could do. A total of 93 strategies were generated by the remaining 63 subjects (Appendix N). DIVERTING ATTENTION (n=27, 29.0%) and ALTERING THOUGHTS (n=23, 24.7%) were the most common categories identified (Table 7); *talking* and *minimizing* were the most common strategies in these categories. SUPPORTING was identified as a role of the health provider in 9.8% (n=16) of the responses, and seven (7.5%) subjects identified the health provider's manner as an important factor (*seeking friendly interaction*).

Coping During the Study Venipuncture. 130 responses were generated by subjects regarding what they did during the procedure that helped reduce the pain experienced (Appendix O). Mean number of responses was 1.5 (SD=0.9). Nine subjects (6 boys and 3 girls) (Mean age=8 years 1 months, SD=15.7) said they did not use any coping strategies during the procedure. Spearman correlation coefficients indicated that age did not significantly affect the number of responses utilized (Research Question 2). However a significant gender difference was observed in the number of strategies reported as used (F=7.21, df(1,83), p=.008). Boys reported using an average of 1.3 strategies (SD=0.8) while the mean number of strategies utilized by girls was 1.8

Table 7: Frequencies for Type of Strategies Generated By Subjects for Things: Parent Could Do and Did, and Health Provider Could Do and Did

TYPE OF STRATEGY	STRATEGIES			
	PARENT COULD DO	HEALTH PROVIDER COULD DO	PARENT DID	HEALTH PROVIDER DID
SUPPORTING	55 (45.8%)	9 (9.7%)	15 (79.0%)	2 (4.2%)
DIVERTING ATTENTION	32 (26.7%)	27 (29.0%)	2 (10.5%)	17 (35.4%)
ALTERING THOUGHTS	15 (12.5%)	23 (24.7%)	-	4 (8.3%)
TAKING PART	4 (3.3%)	11 (11.8%)	-	8 (16.7%)
SUBMITTING	1 (0.8%)	3 (3.2%)	-	1 (2.1%)
ACTIONS INVOLVING OTHERS	13 (10.8%)	20 (21.5%)	2 (10.5%)	16 (33.3%)
- Seeking reward	(4)	(2)	-	(1)
- Seeking a Saviour	(3)	(2)	-	-
- Seeking Healing Action	(4)	(4)	-	(3)
- Friendly Interaction	(1)	(7)	-	(7)
- Technical Competency	(1)	(4)	-	(5)
- Censoring	-	(1)	-	
DON'T KNOW/ UNABLE TO CODE	(14)	(23)	(10)	(19)
TOTAL (excluding Don't Know)	120 (99.9%)	93 (99.9%)	19 (100.0%)	48 (100.0%)

Percentages may vary due to rounding

(SD=0.9).

DIVERTING ATTENTION (n=65, 50%), ALTERING THOUGHTS (n=21, 16.2%), SUBMITTING (n=15, 11.5%) and TAKING PART (n=14, 10.8%) were the most frequently chosen coping strategies (Table 6). A significant gender difference was observed for SUPPORTING (chi-square test=3.85, df=1, p=.05) and DIVERTING ATTENTION (chi-square test=5.68, df=1, p=.02). More girls, than expected, reported using SUPPORTING and DIVERTING ATTENTION strategies. Gender differences were not observed for ALTERING THOUGHTS, TAKING PART and SUBMITTING. ACTIONS INVOLVING OTHERS and CASTROPHIZING could not be analyzed.

Congruence of Strategies Proposed and Used. Owing to small cell sizes caused by the number of subjects offering strategies in some categories, only ALTERING THOUGHTS, DIVERTING ATTENTION, SUBMITTING, and SUPPORTING could be analyzed. Chi-square analysis revealed that subjects who proposed to use these strategies during the venipuncture usually did so (Research Question 4). This finding was observed for the categories of ALTERING THOUGHTS (chi-square test= 24.50, df=1, p<.001), SUPPORTING (chi-square test= 11.25, df=1, p<.001), DIVERTING ATTENTION (chi-square test= 7.61, df=1, p=.005), and SUBMITTING (chi-square test= 5.55, df=1, p=.01).

An examination was made of the field notes about subjects' behaviours observed during venipuncture to determine congruence between proposed and employed coping strategies. Few strategies were available for comparison since many were cognitive and, therefore, could not be observed. A comparison was made between subjects who proposed *not looking* or *watching*, and their observed behaviour (Table 8). Neither Chi-square nor Irwin Fisher Exact Test could be used to analyze the data due to the small expected cell frequencies. However out of 26 cases, 23 subjects were observed to carry out their intentions.

Observational Scale of Behavioral Distress. The mean OSBD score was 3.6 (SD=6.7) with a range of 0 to 35. Forty-nine (57%) subjects received an OSBD score of zero which resulted in a skewed distribution. A modest negative correlation was observed between children's age and the OSBD (r=.35, p=.01, 2-tailed test).

Assistance of Parent/Phlebotomist During Study Venipuncture. Although the intent of the study was to examine how children cope, questions regarding how the parent and phlebotomist assisted the subject were also included in the post-venipuncture

Table 8

Congruity of Strategies Proposed for Use and Used:
Proposed Strategy by Observed Behaviour

	OBSERVED BEHAVIOUR			
PROPOSED	Looked	Didn't Look	Not Reported	TOTAL
Look	3	1	0	4
Not Look	2	20	2	24
No Mention	18	25	15	58

interview. Thirty-three subjects (19 girls and 14 boys) (Mean age=7 years 6 months, SD=20.2) were asked to identify how their parent helped them during the blood collection. Examples of their comments are located in Appendix P. This question was not asked in situations were the parent did not accompany the subject during the procedure. Fourteen (42.4%) of the subjects asked were unable to generate a response. The most common category identified by the remaining 19 subjects was SUPPORTING (n=15, 78.9%) (Table 7).

Although 58 subjects (35 girls and 23 boys) were asked what the phlebotomist did that helped them during the blood collection, 19 (32.8%) subjects would or could not respond. The mean age of these subjects was 7 years 11 months (SD=18.6). A total of 48 responses were generated by the remaining 39 subjects (Appendix Q). The categories of DIVERTING ATTENTION (n=17, 35.4%) and ACTIONS INVOLVING OTHERS (n=17, 35.4%) were most popular (Table 7). The subcategories of *talking* and *seeking friendly interaction* were most frequently cited by the respondents.

Factors Influencing Coping. A discriminant function analysis was performed using the variables age, gender, number of previous venipunctures, anxiety, and report of needle phobia in family to predict use or non-use of DIVERTING ATTENTION strategies. DIVERTING ATTENTION was used as the grouping variable because there were adequate numbers of cases in the two groups.

One significant discriminant function was obtained (chi-square test=11.85, df=5, p=.03). Gender, number of previous venipunctures, and age best predicted use or non-use of DIVERTING ATTENTION (Table 9). Children who were more likely to use DIVERTING ATTENTION strategies were older, female and had a history of previous venipunctures.

Venipuncture Pain

Table 10 presents the correlations among variables. Significant correlations will be highlighted at appropriate sections in the following text.

Predicted Pain. The mean pain score for the P-CEAN child was 51.1 (SD=29.8). Correlations for predicted pain for P-CEAN child with own expected and experienced pain, age and anxiety were computed (Pearson's r). All were near zero and nonsignificant.

Table 9

Summary of Predictors for Use and Non-use of DIVERTING ATTENTION

DIVERTING ATTENTION	INDEPENDENT VARIABLES			
	Frequency of Gender		Mean Age	Mean Number of Previous Venipunctures
	Girls	Boys		
Not Used	13 (28.3%)	21 (53.8%)	8yrs 7mos	2.1
Used	33 (71.7%)	18 (46.2%)	9yrs 7mos	2.5
TOTAL	46 (100.0%)	39 (100.0%)	9yrs 2mos	2.3

Table 10

Correlations Among Variables

VARIABLES	Age	Anxiety	P-CEAN Pain	Expected Pain	Actual Pain	Parent's Estimate Child's Fear
Anxiety	-.254*					
P-CEAN Pain	-.063	.025				
Expected Pain	-.186	.883**	.163			
Actual Pain	-.189	.698**	.018	.666**		
Parent's Estimate Child Fear	-.243*	.795**	-.059	.452**	.336**	
OSBD	-.360**	.547**	.151	.543**	.605**	.355**

* p=.05
** p=.01

The mean score for self expected pain was 32.8 (SD=28.5). No significant correlation was observed between the subject's age and expected pain. A strong positive relationship was observed between anxiety and pain expectations (r=.88, p=.01) as anxious children tended to anticipate more pain. No gender differences were observed in subjects' predicted pain (using ANOVA).

Pain Experienced with Venipuncture. The mean score for the actual pain experienced by the subjects during the blood collection was 24.6 (SD=27.2). A strong positive relationship was observed between expected and experienced pain (r=.67, p=.01) in that children who anticipated higher pain intensity experienced more pain. Similarly, more pain was experienced by anxious children as evidenced by the positive correlation between these two variables (r=.70, p=.05). When asked to evaluate their experience, subjects reported that it was better than anticipated (48.7%, n=40), equal to their expectations (23.7%, n=20), and worse than expected (17.5%, n=14). The remaining 12 children did not express an opinion. Examples of the subjects' responses are presented in Appendix R.

Age was not significantly correlated with actual pain. A significant gender difference was observed for actual pain (Mann-Whitney: Mean Rank Girls=37.9, Boys=49.0, p=.03, 2-tailed). Mean pain for girls was 17.4 (SD=19.5), while the boys' mean pain was 32.8 (SD=32.2).

A 2 X 2 analysis of covariance was performed (gender by use of DIVERTING ATTENTION). Age and anxiety served as covariates. After accounting for the effect of the covariates on actual pain, the influence of gender and use of DIVERTING ATTENTION on pain were determined. Significant main effects occurred for both gender (F=5.93, p=.02; Mean pain: Girls=17.5, Boys=31.0) and use of DIVERTING ATTENTION (F=3.87, p=.05; Mean Pain: Used DIVERTING ATTENTION=17.7, Didn't Use DIVERTING ATTENTION=32.3). However, no significant interaction was found between gender and use of DIVERTING ATTENTION (Table 11 and 12).

A standard multiple regression analysis was conducted between actual pain experienced and the independent variables: age, gender, anxiety, number of previous venipunctures, subjects' reports of use DIVERTING ATTENTION and ALTERING THOUGHTS, presence of family member with needle phobia, and OSBD (coded as presence or absence of a score). Examination of residual scatterplots provided no evidence of failure of normality, linearity, or homoscedasticity (Tabachnick & Fidell, 1989). Altogether, 55% of the variability in actual pain experienced could be predicted by the independent variables. Four of the independent variables contributed significantly to the prediction of actual pain experienced: anxiety, reported use of DIVERTING

Table 11

ANCOVA Summary Table: Gender and Use of DIVERTING ATTENTION on Pain

SOURCE OF VARIANCE	SS	df	MS	F
Main Effects:	4238.1	2	2119.1	
- Gender	1868.6	1	1868.6	5.9*
- DIVERTING ATTENTION	1219.6	1	1219.6	3.9*
2-Way Interaction	108.6	1	108.6	.3
Covariates:	4238.1	2	13519.4	
- Anxiety	1868.6	1	25212.1	80.0**
- Age	1219.6	1	1.5	.0
Error	24276.7	77	315.3	

* $p \leq .05$
** $P \leq .002$

Table 12

Mean Pain Experienced: Subjects' Gender by DIVERTING ATTENTION

	DIVERTING ATTENTION	
GENDER	Not Used	Used
Girls	27.8	13.3
Boys	35.1	25.9

ATTENTION, gender, and needle phobia in family (Research Question 5). Table 13 presents the regression coefficients, squared semipartial correlations, adjusted R^2, and levels of significance (Intercorrelations can be found in Table 10).

Predictions of Future Pain. When asked to predict the difficulty of subsequent blood tests, 68.7% (n=57) of the subjects reported that they would be easier. Forty (57.1%) subjects justified their prediction in terms of knowing what to expect next time. Others explained their optimism in relation to the development of tolerance (15.7%, n=11) and aging (5.7%, n=4). Five children (7.1%) believed that the success of future encounters was linked to factors specific to the situations such as the technician's competency or personality. Finally, six (7.2%) subjects (1 girl and 5 boys) were convinced that their next blood test would be harder. The mean age of this group was 8 years 7 months (SD=24.0) with a mean anxiety score of 39.7 (SD=8.4). Examples of the subjects' responses are presented in Appendix R.

Advice for a Friend Regarding How to Cope. Subjects named 197 strategies that friends could use for venipuncture. Appendix T presents examples of the children's responses. The preferred categories offered as advice were ALTERING THOUGHTS (n=57, 28.9%), DIVERTING ATTENTION (n=55, 27.9%), SUBMITTING (n=38, 19.3%), TAKING PART (n=21, 10.7%), and SUPPORTING (n=20, 10.2%)(Table 6). Six subjects (5 boys and 1 girl) (mean age=9 years 9 months, SD=24.1) offered no advice. Neither age (with Spearman correlation) nor gender (with ANOVA) were related to number of responses generated. Also chi-square analysis revealed no gender differences in type of coping strategies generated.

Parental Perceptions About Child's Pain and Coping

Parent Generated Assistance. Parents named 210 strategies that any parent could use to assist a child experiencing a blood test. The mean number of responses generated by parents was 2.5 (SD=1.0). Examples of the responses received are presented in Appendix U.

The most frequently cited categories were TAKING PART (n=59, 28.1%), ALTERING THOUGHTS (n=46, 21.9%), SUPPORTING (n=39, 18.6%) and DIVERTING ATTENTION (n=29, 13.8%) (Table 14). *Minimizing*, one of the strategies within the category of ALTERING THOUGHTS, was the most popular coping strategy generated by parents.

Many of the responses within the category of TAKING PART related to *telling*

Table 13: Multiple Regression: Predictors of Experienced Pain

Variables in the Equation:

VARIABLE	Unstandardized Regression Coefficients (B)	Standardized Regression Coefficients (Beta)	Squared Semipartial Correlations	p of t test
OSDB	2.18	4.87	.001	
Family Member with Needle Phobia	-7.97	4.15	.020	.06
Reported Use DIVERTING ATTENTION	-9.24	4.39	.024	.04
Number Previous Venipunctures	.75	2.23	.001	
Subjects' Gender	8.69	4.17	.024	.04
Reported Use of ALTERING THOUGHTS	-4.24	5.35	.003	
Anxiety	3.83	.46	.376	$<.001$
Subjects' Age	.03	.09	.001	
(CONSTANT)	-111.77	21.01		

Adjusted $R^2 = .548$

Table 14

Frequencies for Type of Strategies Generated By Parents for Things: Any Parent Could Do to Help Anxious Child, and Actually Told to Child

TYPE OF STRATEGY	STRATEGIES	
	GENERAL STRATEGIES	STRATEGIES TOLD TO CHILD
SUPPORTING	39 (18.6%)	12 (8.4%)
DIVERTING ATTENTION	29 (13.8%)	42 (29.6%)
ALTERING THOUGHTS	46 (21.9%)	28 (19.7%)
TAKING PART	59 (28.1%)	33 (23.2%)
SUBMITTING	7 (3.3%)	14 (9.9%)
ACTIONS INVOLVING OTHERS	27 (12.9%)	11 (7.7%)
- Providing reward	(9)	(5)
- Offering Postive Interaction	(12)	(4)
- Informing Honestly	(6)	(2)
CATASTROPHIZING	3	2 (1.4%)
DON'T KNOW/ UNABLE TO CODE	(1)	(13)
TOTAL (excluding Don't Know)	210 (100.0%)	142 (100.0%)

the child about blood collection (i.e., reason for, technique used, personal experience). Six parents emphasized the need for honesty when giving information (subcategory: *informing honestly*).

Parents also provided specific information regarding coping strategies that children might use. The majority of these strategies fell within the categories of DIVERTING ATTENTION or ALTERING THOUGHTS.

Specific Information Given to Child. When asked to describe the information given to the subject prior to this venipuncture, 10 (11.6%) parents stated that no information had been exchanged. The majority of these parents cited lack of time as the mediating factor for this omission. Other explanations included that the child hadn't asked for any information, child didn't appear anxious, and nothing said by parent would help child.

One hundred and forty-two responses were generated by the remaining 76 parents. Appendix V provides examples of the responses generated by the parents. The most popular strategies were those in the categories of DIVERTING ATTENTION (n=42, 29.6%), TAKING PART (n=33, 23.2%), ALTERING THOUGHTS (n=28, 19.7%), and SUBMITTING (n=14, 9.9%) (Table 14). *Not looking* was the most common coping strategy recommended by the parents.

Child-Generated vs Parent-Generated Responses. Due to small expected cell frequencies, Chi-square analyses could only be used to compare children and parents' responses for the categories of SUPPORTING, DIVERTING ATTENTION, and ALTERING THOUGHTS. No significant differences were observed in the type of strategies the children believed parents could use, and those generated by parents (Research Question 6). The parent's role in SUPPORTING was ranked higher by the children than their parents. Meanwhile, parents' placed greater emphasis on their role in informing children about the blood test (TAKING PART).

Family Member with Needle Phobia. About half of the parents (55.8%, n=48) reported one or more family members with a needle phobia. A sibling (n=16, 29.6%) or the father (n=15, 27.8%) of the subject were most often identified as the phobic individual. Table 15 illustrates all family members said to have a needle phobia. Twelve subjects (14%) were accompanied to the laboratory by the person who was identified as having the needle phobia.

Appendix X provides additional Frequency Tables of the data.

Table 15

Family Member With Needle Phobia

PERSON WITH PHOBIA (relation to child)	Frequency	Percentage
Sibling	16	29.6
Fathers	15	27.8
Mother	8	14.8
Child	8	14.8
Grandparent	2	3.7
Aunt/Uncle	2	3.7
Not Specified	3	5.6
TOTAL	54	100.0

Discussion

Coping With Pain

Pain, the needle, and the unknown were the predominant stressors identified by the children in relation to blood collection. The majority of children were able, nonetheless, to generate strategies which they perceived would help reduce the pain and distress experienced. These responses were coded into 36 different coping strategies which were subsequently grouped into seven categories: SUPPORTING, DIVERTING ATTENTION, ALTERING THOUGHTS, TAKING PART, SUBMITTING, ACTIONS INVOLVING THE PARTICIPATION OF OTHERS, and CASTROPHIZING.

A taxonomy encompassing the various strategies used by children experiencing pain could be helpful in assessing children's coping abilities. It is difficult to ascertain the optimal number of categories to include in a taxonomy of children's coping strategies. Although classification systems which contain only a few categories are easy to use, they provide little information regarding the diversity of children's responses. Conversely, taxonomies which contain numerous categories provide more detail and are more sensitive to changes in children's coping. However, they may be more cumbersome to use.

Currently, the number of categories incorporated in taxonomies of children's coping range from 2 (Field, Alpert, Vega-Lahr, Goldstein, & Perry, 1988; Lazarus & Folkman, 1984) to 13 (Ryan, 1989). For example, Field et al. (1988) in their investigation of how children cope with pain divided children into two groups: repressors (i.e., avoid information or deny) and sensitizers (i.e., actively seek information) based on parent's assessment. Jerrett (1985), however, utilized the 3 group classification system developed by Lazarus (1980): (1) direct action physical activities, (2) avoidance, and (3) help-seeking activities. Similarly, Curry and Russ (1985) divided children's coping into 3 subtypes: (1) information-seeking, (2) support-seeking, and (3) direct efforts to maintain control.

Other taxonomies have been postulated based on the responses of healthy children to hypothetical general and health-related situations (Brown et al., 1986; Ryan, 1989; Sorensen, 1990; Rossman, 1992). For example, the 13 categories postulated by Ryan (1989) include: (1) physical exercise, (2) aggressive motor activities, (3) social support, (4) aggressive verbal activities, (5) isolating activities, (6) avoidant activities, (7) habitual activities, (8) spiritual activities, (9) relaxation activities, (10) cognitive activities, (11) emotional behaviors, (12) distracting activities, and (13) other behaviors.

Although the number of categories employed in this study was not predetermined, seven categories seemed to emerge from the children's responses. Similarities and

differences are evident among this classification system and those reported in the literature. For example, the involvement of others is either implicitly or explicitly acknowledged in the various taxonomies: sensitizers (Field et al, 1988), help-seeking activities (Jerrett, 1985), information-seeking and support-seeking (Curry and Ross, 1985), social support (Ryan, 1989), and in this study SUPPORTING and ACTIONS INVOLVING THE PARTICIPATION OF OTHERS.

Several of the classification systems acknowledge the existence of ineffective copers who in this study were grouped under the category of CASTROPHIZING. For example Brown et al. (1986) identified catastrophizers and Ryan (1989) referred to children who exhibited aggressive motor activities.

The predominant difference noted for the various taxonomies concerns the detail provided about the type of coping strategies utilized by children. Taxonomies with several categories inherently provide more information about the specific activities employed by children. For example, the categories of DIVERTING ATTENTION, ALTERING THOUGHTS, and TAKING PART provide more detail regarding the child's response than Curry and Russ's (1985) "direct efforts to maintain control".

The variety of coping strategies generated by the subjects in this study suggest that children's ability to cope with pain may have been previously underestimated. For example, Tesler et al. (1981) reported that children rely on others when coping with pain. The diversity of strategies generated by subjects of this study also conflicts with the findings of Ross and Ross (1984) who reported that only 21% of children used any self-initiated strategies to cope with pain.

Branson and Craig (1988) postulated that estimates of children's coping capabilities may vary in response to the questions posed. This proposition is supported by conflicting estimates of children's coping repertoire. For example, Jerritt (1985) reported that 53% of the children in her study were able to identify four or more strategies that helped them feel better when experiencing pain. However in this study, the average number of coping responses generated by each child ranged from 0 to 4. Moreover, children were more selective when choosing strategies for their own use. Finally, the prevalence of ineffective copers in this study was considerably less than the 64% of children who were labelled as catastrophizers by Brown et al. (1986). In this study, only four children perceived the situation IN TERMS OF CASTROPHIZING.

The efficacy of the strategies generated by children in this study are likely not equal. For example, strategies within the category of SUBMITTING are likely not as effective as those in DIVERTING ATTENTION. Variability exists even within categories as strategies such as *not thinking* generally offer less assistance than others such as *imagery*. Further discrepancies are evident in the nature of the responses

generated by the children. For example, some of the children offered only vague descriptions of a strategy while others gave explicit descriptions of what to do. For example:

> Relax. Just think of something else.
>
> (Boy, 9 years old)

> I'm going to close my eyes and dream of something.
> Having a strawberry ice cream with my mother.
>
> (Boy, 7 years old)

It was not possible to rate the efficacy of the strategies generated by the children in this study. The pain experienced by children is likely influenced not only by the type, but also by the quality of coping strategies employed. Subsequent research might examine not only the number and type of strategies generated, but also the quality of the coping response. Quality might be evaluated based on criteria such as: (1) amount of detail provided, (2) realistic application in situation, and (3) potential for positive effect.

The most popular strategies cited by the children in this study were those of the categories: DIVERTING ATTENTION, ALTERING THOUGHTS, and SUBMITTING. Several significant findings were observed in relation to children's ability to cope with pain. Generally, children reported using the strategies that they earlier had proposed to use. This finding supports the notion that children have a repertoire of preferred coping strategies. Secondly, the majority of children perceived that future venipunctures would be less distressing. The most common reason cited for their optimistic outlook was that they had learned from this experience and now knew what to expect. Finally, children who reported using DIVERTING ATTENTION strategies experienced significantly less pain than other children. This finding provides evidence to support the premise that children can play an active role in pain management.

Pain

Although it is commonly believed that age influences children's pain perceptions (McGrath, 1990), no relationship was found. A strong positive correlation was observed, however, between anxiety and expected pain. The magnitude of this relationship was considerably greater than has been previously reported. Almost half (45.3%) of the children interviewed reported that the blood collection was better than expected. This statement was substantiated by the difference observed in the mean pain scores for expected and actual pain experienced.

The lack of a relationship between the pain scores generated for the P-CEAN child and those generated for self was unexpected. One possible explanation for this finding is that the majority of children perceived that they would deal with the venipuncture better than other children would.

Gender. No gender differences were observed in this study for children's anxiety and expected pain. These findings support those of other researchers (Fowler-Kerry & Lander, 1991; Lander, Fowler-Kerry, & Hargreaves, 1989). However the observation that girls experienced less pain than boys, contradicts earlier research (Lander & Fowler-Kerry, 1991; Fradet et al., 1990). The discrepancy in the findings among these studies cannot be attributed to different populations, for these studies were all conducted with Canadian children and in similar settings. Furthermore, the difference in actual pain cannot be attributed to an artifact of gender differences in age or anxiety as these variables were statistically controlled during the analysis.

While it is true that girls were more likely than boys to employ DIVERTING ATTENTION and SUPPORTING strategies, and that use of DIVERTING ATTENTION was associated with reduced pain scores, these results do not account for the findings of no gender differences in experienced pain reported in other studies. Female subjects in previous studies also could be expected to employ and benefit from DIVERTING ATTENTION.

A plausible explanation for the differences in results among these studies can be proposed. Since girls valued SUPPORTING more than boys, they may have derived support from the dialogue about coping and pain occurring during the study. In short, although the study was not intended to modify venipuncture pain, perhaps the discussion about coping and pain lessened girls' pain because they obtained support. The comment made by one 10 year old girl sums up this view:

> It was okay this time because we talked before I had the test.
> So it was easier this time.

Another explanation can be offered for the gender differences in pain observed in this study. Because they talked about coping strategies prior to the venipuncture, perhaps girls were more likely to utilize the strategies they generated than were boys.

An additional gender-related finding was observed in this study. Only girls suggested that there was nothing they could do to reduce the pain from venipuncture (CASTROPHIZING). Once the venipuncture was done, three boys and one girl reported that nothing helped. This finding offers further support that although expectations about

the venipuncture did not differ for boys and girls, the actual experience did.

Anxiety

The observed negative relationship between children's age and anxiety were consistent with the findings of previous studies (Fowler-Kerry & Lander, 1991; Jacobsen et al., 1990). Although a positive relationship was observed between children's anxiety and parents' estimates of their child's fear, the inherent advantage of obtaining self-reports for subjective emotions when possible would seem obvious. Furthermore, positive correlations may not necessarily equate to accurate predictions (Erskine, Morley, & Pearce, 1990; Lander, Hodgins, & Fowler-Kerry, 1992).

Concern that involvement in the study might negatively affect the children's behaviour during the procedure was expressed by several parents and health care providers. For example, one parent declined to participate in the study because of this concern. Another parent, who admitted having a needle phobia, phoned the day following his daughter's involvement in the study to suggest that children would supply more information if interviewed only after the procedure had been completed or away from the laboratory setting. His rationale was that "it is hard to answer questions when you are anxious". Although a formal survey of the staff and parents' perceptions regarding the actual effect of the study on children's response to the blood collection was not conducted, several positive comments were received. For example, three parents stated that their child did better than they had anticipated and attributed it to his/her involvement in the study.

Nonparticipation in the study may be attributed in part to anxiety. The three girls who chose not to participate in the study appeared to be very anxious. One girl started to cry as the purpose of the study was explained. Another child was found curled up in one of the waiting room chairs and refused to move. Subsequently, both these children exhibited physical and verbal resistance during the execution of the blood collection. The manner exhibited by the third child was quite different. Although this girl was very pale and quiet prior to and during the blood collection, she was cooperative. However, once the procedure was completed, she became weak and vomited.

The Helping Role of Others

Much of what children learn about pain behaviours occurs within the family context (Craig, 1975). Due to a high prevalence of needle phobias in families, many children may be exposed to ineffectual role models. Furthermore the children who are accompanied to the clinic by the phobic person may receive little support or assistance in dealing with the situation.

Although parents in this study were able to generate a number of general strategies that any parent might use to assist an anxious child, this information was not necessarily shared with the child. Various factors were cited by the parents to explain this omission.

Variations were also observed in the merit of the parents' responses. For example, two parents generated responses exemplifying strategies intended to give the child a sense of *taking control* of the situation.

> We can come back later if you're too scared now.
>
> (Parent, Girl 6 years old)

> Let's rate the technician on a scale of 1 to 10. Nod your head when you're ready.
>
> (Parent, Girl 10 years old)

Although the first example allows the child to exercise control over the situation, it could also promote the development of avoidance behaviours. The second example, however, allows the child to perceive some sense of control without jeopardizing the child's health by delaying or avoiding the procedure. This distinction is significant as the second child was a diabetic.

Generally, the type of information given by parents regarding assisting an anxious child was congruent with children's comments of how a parent could assist the P-CEAN child. This finding suggests that some exchange of information occurs between parents and children. Nonetheless, some differences were observed. For example, children generally perceived the parents' primary role to be one of SUPPORTING. Whereas parents placed greater emphasis on their responsibility to inform (TAKING PART).

Some parents indicated that they relied on the health care professional for direction and assistance. Unfortunately, supplementary anecdotes written by parents suggested that occasionally they were disappointed with the actions taken by the health provider (Appendix W).

Evidence that children benefit from the interaction that occurs between the health provider and themself was also observed. *Talking* and *seeking friendly interactions* were the most popular coping strategies generated by the children regarding how the health provider assisted them during the procedure.

Comments About Tools Used in This Study

To facilitate children's verbalizations about coping, a projective technique was

utilized in this study. A concern identified in relation to the use of this tool was the possible introduction of bias due to the gender, age, and cultural-orientation of the characters portrayed. To respond to this concern, the P-CEAN was created portraying only a rear view of a child who was attired in gender-neutral clothing (i.e., jeans and a sweatshirt). Despite these efforts, more than one-quarter of the children mentioned opposite gender labels. However no evidence was found to suggest that this mislabelling jeopardized the children's responses. Furthermore, the P-CEAN helped focus the interview and generate discussion as several children interspersed personal anecdotes in their discussion.

Younger children, generally, experienced more difficulty interpreting the P-CEAN as reflected by the mean age of children who were unable to generate a response to the various questions. Factors which may have contributed to this lack of discussion include the child's level of cognitive maturity, lack of previous experience with venipunctures, and anxiety.

Additional evidence to substantiate that children experience distress during a venipuncture was provided by the P-CEAN. The majority of subjects perceived that the blood test would be a negative experience for the P-CEAN child. This finding corroborates previous research that has reported that many children have a fear of "needles" (Fassler, 1985).

The VAS proved to be an efficient means of quantifying the intensity of children's pain experiences. The youngest child who demonstrated proficiency in the use of the tool was 4 years 10 months old. Nonetheless, one 5 year old subject (girl, 67 months) was unable to use the VAS as she ranked the pain faces in reverse order. This case demonstrates the value of incorporating a procedure for validating children's proficiency in the use of the VAS before enroling them in a study.

Some problems were encountered with the instruments used to measure anxiety. Eight children missed more than three items on the state portion of the STAI-C. These children tended to be younger. That English was a second language for one of these subjects may have contributed to the child skipping a number of items. Anxiety may also have been a factor in some cases. For example, one 8 year old girl was distracted from the STAI-C by another child who cried during venipuncture.

A few of the descriptive terms used in the STAI-C were troublesome for many of the children. For example, jittery ($n=28$; 32.6%), satisfied ($n=13$; 15.1%), and pleasant ($n=11$; 12.8%) were the items most frequently left unanswered. Perhaps revisions to the STAI-C are required to better reflect current vernacular.

A problem encountered with the use of the OSBD was that over half of the children did not exhibit any of the behaviour which was to be scored. Because these same

children provided a full range of pain and anxiety scores, it is doubtful that they were unaffected by the procedure. The validity and reliability of the OSBD in assessing children's distress during venipunctures must, therefore, be questioned. The negative correlation which was observed between age and OSBD suggests that the instrument may be more appropriate for younger children.

Nursing Implications

The findings of this study suggest that most children have a preferred repertoire of strategies for dealing with venipuncture. Furthermore, children also tend to utilize the strategies that they say they will use. It was also observed that at least in relation to the category of DIVERTING ATTENTION, the use of these strategies can reduce the pain experienced by children during venipuncture.

By working with or building on children's preferred strategies, their ability to cope with venipuncture may be significantly enhanced. Efforts should, therefore, be directed towards learning and working with a child's preferred strategies. For children who require regular laboratory blood testing (e.g., diabetics, cancer patients), a reference system might be adopted to communicate these preferred strategies to all health providers. This process would not necessitate a large investment of time. In this study, the pre-venipuncture interview with the child took approximately 10 minutes, and the discussion of coping strategies was only one of the issues addressed. The potential for gender differences in relation to type of coping strategies used, and how children respond to interventions must also be considered. For example, girls may especially benefit from interventions aimed at promoting the use of self-generated coping strategies.

A minority of children perceived venipunctures in terms of CASTROPHIZING. They believed that nothing could help reduce the pain experienced. These children need special attention in order to prevent the development of phobic or avoidance behaviours. Without intervention, this ineffective coping pattern may endure into adulthood. Due to the observed effect of DIVERTING ATTENTION strategies in reducing pain experienced, children who have no preferred strategies may benefit from interventions aimed at teaching these techniques.

Because the majority of children perceived parents as a source of SUPPORT, parents should be encouraged to assume an active role in assisting their child to cope with a venipuncture. An awareness of the prevalence of needle phobias among family members is important. Parents may also require assistance in dealing with the procedure and in learning what they can do to assist their child.

Booklets offering parents simple hints and techniques regarding how to assist a

child who is having a needle may be useful. For example, a simple but effective means of introducing children to issues regarding how to cope with pain-inducing procedures may be for parents to allow their child to observe them during blood collections. This exposure would provide an opportunity not only for children to become familiar with the procedure, but also for parents to introduce simple coping techniques. This tactic may not be suitable, however, for parents with a needle phobia.

It was observed that some parents prepared their children by discussing what they (i.e., parent and child) would do during the procedure. Learning about these plans and incorporating them into the procedure may not only reduce the distress experienced by the parent and child, but also increase their satisfaction with the health agency. These actions may also be important due to the value that children place on the interaction component of the procedure.

Recommendations

Currently, a theoretical framework to explain how children cope with the experience of pain does not exist. Inasmuch as this study represents a preliminary investigation into issues affecting children's coping, further research is needed to validate and expand on the findings. The accuracy and adequacy of the proposed coping categories need to be evaluated in relation to other pain-inducing procedures, and to the experience of acute and chronic pain. If these categories adequately reflect differences in children's coping, a child-oriented assessment tool should be developed. Such a tool would be of value for future research about children's coping with pain.

Further investigation is needed about the gender differences uncovered in this study. Research is needed to identify the role of gender in the number of coping strategies generated, type of strategies generated and used, and the pain experienced by children.

Although the majority of children perceived that future venipunctures would be easier, a longitudinal study is needed to examine how children's coping patterns change following repeated exposure to a pain-inducing stressor. Furthermore, children's coping should be examined in relation to the increasing use of topical anaesthetic agents (e.g., TAC, EMLA). A common belief is that if pain is eliminated so too is the child's distress, however, the validity of this premise has not been established.

Summary

To summarize the findings in relation to the purposes of this study. Most children were able to generate a variety of strategies to cope with the experience of pain. From the children's responses a taxonomy of seven coping categories was formulated: SUPPORTING, DIVERTING ATTENTION, ALTERING THOUGHTS, SUBMITTING, TAKING PART, CATASTROPHIZING, and ACTIONS INVOLVING THE PARTICIPATION OF OTHERS. Children tended to be more selective when choosing strategies for their own use. Furthermore, children tended to employ the coping strategies that they proposed to use.

Several factors which may affect children's coping abilities and pain perceptions were identified. Age differences were not observed in the number of coping strategies reported as used. However gender differences were noted in the type of coping strategies employed as girls reported using more DIVERTING ATTENTION and SUPPORTING strategies. Although a strong positive relationship was observed between children's anxiety and their predictions of pain, no relationship was found between expected pain and the children's age and gender. Age was also not correlated with experienced pain. However an unexpected gender difference was observed in actual pain experienced. Girls reported less pain than boys. A possible explanation for this finding is that girls derived some benefit from their involvement in the study. Children's coping responses were also observed to influence the pain experienced as children who reported using DIVERTING ATTENTION strategies experienced less pain.

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Appendix A

WHEN THEY HURT: HOW CHILDREN COPE WITH PAIN

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To maintain health, even "well" children occasionally encounter pain as a result of medical procedures such as immunizations. Frequently when illness or injury strikes, children are forced to endure multiple tests and treatments many of which cause pain. The diversity of responses exhibited by these children incites one to contemplate the process by which children learn to cope with pain. Why do some children tolerate procedures with minimal distress, while others exhibit extreme pain, fear and panic? Before we can effectively intervene in these situations, an understanding of the coping processes utilized by children is required.

Children and adults do not interpret the world in the same way (McGrath, 1990; Ryan, 1988). Until recently little was known about children's perceptions of pain or how they deal with it as children were considered to be unreliable informants (Eland, 1988; Faux, Walsh, & Deatrick, 1988). This absence of empirical information has resulted in the emergence and proliferation of misconceptions regarding pain in children. They include beliefs such as that children do not feel pain, children feel pain but are unable to tell others about it, children feel pain but analgesics should be administered cautiously, or they feel pain but quickly forget the whole experience (Lutz, 1986; Thompson & Varni, 1986; Wachter-Shikora, 1981). These myths about the pain experienced by children precipitate its undertreatment (Eland, 1988; Harrison, 1991 (b); Melzack, 1988; Schechter, 1989).

Frequently, children are viewed as passive players in the management of their pain. This attitude has resulted in little attention being directed towards understanding children's abilities to cope with pain (Branson & Craig, 1988; Curry, Fuss, Johnsen, & DiSantis, 1988; Lynn, 1986). Without this information, health care professionals may inadvertently worsen situations by impeding or suppressing the self-initiated coping strategies utilized by children (Fanurik & Zelter, 1991). In this essay, a review of the literature is presented which examines factors which may effect children's ability to cope with pain, in particular the pain induced by medical procedures. Gaps within the literature and areas requiring further research are also identified.

Pain

Introduction of the Gate Control Theory by Melzack & Wall (1965) radically altered the conceptualization of pain. Pain was acknowledged as more than a sensory response equivalent to the amount of tissue damage. The multidimensional and highly subjective nature of pain was described in terms of its sensory-discriminative, motivational-affective, and cognitive-evaluative aspects (Melzack, 1986; Melzack & Wall, 1988). Due to its unpleasant, affective nature, pain motivates people to take actions aimed at stopping it. This motivational force stimulated discussion of the response to pain in terms of two components: one sensory and the other reactive (Beecher, 1956; Melzack & Casey, 1966). Geach (1987) maintains that an unfortunate consequence of this conceptualization is that the reactive dimension confounds the concepts of pain and coping. To facilitate the investigation of how people cope with pain, Geach recommended differentiating the two concepts by defining pain only in terms of the sensory response to the threatened or actual tissue damage. Consequently, coping can be described as how the person thinks, feels, and acts in response to the sensation of pain (Geach, 1987).

Coping

Most of the coping theories, currently available, focus on how adults respond to stressors. This fact has generated scepticism regarding the applicability of these theories to children (Ryan-Wenger, 1990). Due to immature psychomotor skills, it is unlikely that children appraise or respond to stressors in the same manner as adults. Strategies that assist adults cope may prove to be ineffective or even detrimental for children (Branson & Craig, 1988). However until more is known regarding the coping processes of children, adult theories will continue to be superimposed.

Coping is primarily a cognitive process. When a stimulus is perceived to be capable of disrupting one's physiological or psychological equilibrium, coping responses are activated. A state of arousal occurs which generates neurophysiological, cognitive, and emotional changes (Garmezy & Masten, 1990). Lazarus and Folkman (1984) outlined two steps within the coping process: an ongoing appraisal and reappraisal of the situation as well as one's resources to deal with it, followed by actions aimed at emotions-regulating and problem-solving. The crucial determinant in this process is the person's perception of the situation (Dise-Lewis, 1988). If the situation is perceived by the individual to exceed his/her ability, the event will have disruptive consequences, however if the individual's resources match or exceed the demand, the stressful event may result in growth or maturation (Garmezy & Masten, 1990).

The effectiveness of the coping process is determined by evaluating its outcome (Johnson & Lauver, 1989). Competency or effective coping has been defined as the

ability to cope with stressors in a manner appropriate to one's level of development (Kimchi & Schaffner, 1990). Effective coping generates feelings of control or mastery over the situation. Conversely, ineffective coping may generate feelings of anxiety, distress and loss of control which may be exhibited by behaviours such as crying, acting-out, or panic. Ineffective coping has been suggested as a precursor to avoidance or phobic behaviours (Arntz, & Lousberg, 1990; Ost, 1991). Knowledge of this process is important as coping patterns which are learned and which work during childhood tend to persist into the adult years (Copp, 1974).

Much of the research conducted in the area of children's coping has limited generalizability due to problems associated with small sample sizes, indirect or retrospective measures, instruments with questionable reliability and validity, and an adult-centered approach to the topic (Branson & Craig, 1988; Carpenter, P.J., 1990; Ryan, 1989). Compas, Malcarne, and Fondacaro (1988) identified four issues in children's coping which require further investigation. These areas include the type of coping strategies employed by children and their function, the ability of children to conceptualize alternative solutions and its relation to emotional and behavioural problems, the cross-situational consistency or variability in children's coping, and finally the relationship between coping and cognitive appraisals of the stressful situations.

Coping Strategies

Coping strategies are learned, deliberate and purposeful emotional and behavioural responses used to minimize the impact of stressors (Holmes & Stevenson, 1990; Lazarus & Folkman, 1984). Several schemes have been proposed to categorize coping strategies (Abu-Saad, 1981; Curry et al., 1988; Dise-Lewis, 1988; Lazarus & Folkman, 1984; Roberts et al, 1987; Sorensen, 1990; Youssef, 1981). Although not developed specifically for children, Lazarus and Folkman's (1984) classification system of problem-focused and emotions-regulating coping strategies is perhaps the most popular. Problem-focused coping strategies are those efforts aimed specifically at changing the source of the stress. Whereas strategies intended to monitor and control the emotions generated by the stressor are labelled as emotions-regulating (Lazaraus & Folkman, 1984). These groups can be further subdivided into cognitive and behavioural tactics (Roberts et al., 1987).

Although studies have established that children are capable of identifying a variety of coping strategies (Dise-Lewis, 1988; Ryan, 1989; Ryan-Wenger, 1990), little is known about the kinds of coping strategies children actually utilize when confronted by a stressor. Research is needed to identify what, when, and how coping strategies are employed by children. Because what children actually do may be very different from what they think or recall (Compas et al., 1988), prospective and retrospective studies

may be of limited value in this process and may be responsible for some of the controversial findings reported. For example in a retrospective studying involving over 900 school-aged children, Ross and Ross (1984) observed that only a small percentage of these children reported using self-initiated coping strategies. Concern has been expressed regarding children's general ignorance of the nature of pain, its significance for them and what they can do to cope with it (McGrath & Craig, 1989; Ross & Ross, 1984). Conversely, Jerret (1985) in a study of children between 5 and 9 years of age found that her subjects had no difficulty in describing how they manage pain. All of the children could recall strategies that enabled them to feel better. Similar findings were obtained in a exploratory study of children during restorative dental treatments as every child made some effort to cope, with the majority using a variety of cognitive and behavioural strategies (Curry et al., 1988).

Several clinical studies have attempted to identify the types of coping strategies actually employed by hospitalized children. Pidgeon (1981) observed that the majority of questions posed by hospitalized preschoolers were directed towards determining the actions and intentions of the strangers they encountered. She speculated that this orienting maneuver might reflect the child's attempt to attain some control over his/her new environment. Less effective coping strategies were observed in a study of 170 children recovering from elective surgery. Mather and Mackie (1983) found that children rarely requested medication for pain relief, with many preferring to suffer with the pain rather than the dreaded "needle". The children concealed their feelings by withdrawing or using distraction techniques such as reading a book or watching television, admitting to their pain only upon direct questioning. These behaviours were frequently interpreted by health care providers as evidence of effective coping.

Children's ability to identify and implement coping strategies may be inhibited when they actually confront a stressor. In a study of 214 school-aged children, it was observed that hospitalized children stated that they didn't know what would help them cope with their pain twice as often as nonhospitalized "well" children (Tesler, Wegner, Savedra, Gibbons, & Ward, 1981). The type of coping strategies actually employed also influences the outcome achieved. Broome, Bates, Lillis, and McGahee (1990) reported that children who exhibit passive coping behaviours such as ignoring, inactivity, and cooperation experienced significantly higher levels of pain during a lumbar puncture, than children who utilized active coping strategies (e.g. asking questions, attempting to control situation, attacking).

Increasing attention has been directed towards identifying factors which may endanger or protect children from the stress induced by noxious stimuli such as pain. Currently, there are no explicit criteria by which to evaluate whether a variable increases

or decreases a person's ability to cope (Kimchi & Schaffner, 1990). Although it has been suggested that coping is best understood by examining the relationship between the person and the environment (Folkman & Lazarus, 1980; Rutter, 1987), for the purpose of this paper they will be examined separately. These contributing factors will be examined according to those that are intrinsic to the child such as age, temperament, and gender; and those that are extrinsic or external, for example, the specific stressor, family milieu and the environment (Trad & Greenblatt, 1990).

Intrinsic Factors

Age. Any explanation of the stress-coping behaviours utilized by children is likely to be specific for age and level of cognitive development (Carson, Council, & Gravley, 1991; Ryan, 1988). Cognitive development and the ability to understand abstract concepts such as pain have been closely aligned with age. Piaget (1960) proposed that children progress through distinct stages of cognitive development starting with a "sensorimotor" level (birth to 2 years) and progressing through "preoperational" (age 2-7 years), "concrete operations" (age 8-10), and finally "formal operations" (age 11-14). Children's ability to describe pain has been shown to parallel these stages of cognitive development (Gaffney & Dunne, 1986; Hurley, & Whelan, 1988; McGrath, 1990; McGrath, & Craig, 1989; Ross & Ross, 1988; Thompson & Varni, 1986).

The changes which evolve in children's understanding and expression of pain have important implications for clinical practice in relation to the assessment and management of their pain (Miles, & Neelon, 1989). In a review of the literature, Thompson and Varni (1986) reported that the majority of 7 to 11 year old children view unpleasant treatments such as injections as a form of physical assault. School-age children may also interpret pain as a form of punishment for alleged wrong-doings (O'Dougherty & Brown, 1990). It has been postulated that thoughts and attitudes about pain and its meaning change with age so that adolescents may actually experience more intense feelings than children (Lavigne, Schulein, & Hahn, 1986).

How children deal with pain is also related to their cognitive maturity (Peterson, 1989). It has been suggested that younger children have fewer coping strategies in their repertoire making them more vulnerable to stressors that are beyond their control (Sharrer, & Ryan-Wenger, 1991; Turkel & Spencer, 1990). However, it is doubtful whether improved coping is merely a function of the number of coping strategies available (Branson & Craig, 1988). In a study of 175 children from two cultural backgrounds who were undergoing bone marrow aspiration, developmental changes related to age were observed to be more predictive of overt signs of distress than gender

or culture (van Aken, van Lieshout, Katz, & Heezen, 1989). As children mature they tend to display fewer distress behaviours such as crying or acting-out, and demonstrate more self-control as evidenced by increasing muscular rigidity (Hubert, Jay, Saltoun, & Hayes, 1988; Jay, Ozolins, Elliott, & Caldwell, 1983; Lavigne et al, 1986; Rasnake, & Linscheid, 1989; Savedra & Tesler, 1981; van Aken et al, 1989). This increasing self-control which typically evolves with age may also be reflected by the use of more emotions-regulating strategies (Compas et al., 1988). What is not known is whether increased self-control is synonymous with effective coping.

LaMontagne (1987), in a study of 42 children undergoing elective surgery, reported a positive correlation between age and coping. In this study, effective coping was determined based on the use of more active coping strategies and fewer avoidance behaviours. Conflicting results were obtained in a study of 43 children during their first bone marrow aspiration as it was reported that, although distress behaviours decreased with age, the approach-avoidance responses did not (Hubert et al, 1988).

In Curry et al.'s (1988) summary of two studies which examined the self-initiated coping efforts employed by children during restorative dental care, the initiation of cognitive coping strategies was observed to be a significant predictor of successful adjustment. Reissland (1983) observed that older children used more cognitive strategies to deal with the fears generated by elective surgery, while younger children resorted to more behavioural strategies such as calling for "mum". By integrating the findings reported by these authors, one could support the hypothesis that older children are more effective copers. Despite the significant role that age plays in children's ability to cope, research has not supported the hypothesis that age is the sole determinant of effective coping in children.

Coping Style. Coping style is defined as the characteristic way a person behaves when confronted with a stressor (Ryan, 1988). Two basic coping styles have been proposed: repressors and sensitizers (Byrne, cited in Hubert et al., 1988; VanDalfsen, & Syrjala, 1990). Repressors refer to those individuals who tend to cope by blocking-out information concerning the stressor. A coping strategy frequently employed by repressors is denial. Conversely, sensitizers tend to actively seek-out information concerning their situation. Other labels attached to this dichotomy of coping styles includes monitors and blunters, avoiders and copers, or attenders and rejecters (Miller & Green, 1985, cited in Ryan, 1988; Mullen, & Suls, 1982; VanDalfsen & Syrjala, 1990). A variety of coping strategies are subsumed within these two coping styles (Cohen, & Lazarus, 1973).

Coping styles have direct implications for the person's ability to adapt to stressors. It has not been established which style is more effective in both the short and

long term. In a meta-analysis of 19 studies dealing with the effect of coping styles, Mullen and Suls (1982) observed that in the short term repression was more adaptive, however, in the long term sensitization appeared to be more beneficial. Because the characteristics of the sample populations were not delineated, it is impossible to predict whether their findings apply to children.

Studies of children's coping styles have generally adopted this dichotomy of terms. For example a Coping Style Inventory measurement tool has been specifically designed for children (Field, Alpert, Vega-Lahr, Goldstein, & Perry, 1988). Research has suggested that children displaying repressive forms of coping appear to experience more anxiety and distress than children with sensitizing patterns. This hypothesis was confirmed in a study of 56 children, aged 4 to 10 years, who were hospitalization for minor surgery (Field et al., 1988). Similar findings were reported by Melamed et al. (1988) who observed that successful copers had more accurate information regarding the situation and reported using more strategies to manage their stress.

Recent studies have challenged some of the traditional assumptions regarding children's coping. Smith, Ackerson, and Blotcky (1989) found that the coping styles of school-age children and adolescents were a consequence of their previous experience with the pain-inducing procedure. Repressors tended to be children with less experience with the specific stressor. This study of 42 cancer patients during bone marrow aspiration also reported that repressors who were provided with information exhibited fewer distress behaviours than the other treatment groups, followed by sensitizers using distraction. Although matching treatment to preferred coping style did not minimize overt distress behaviours, it did have a positive effect on children's subjective ratings of the pain experience. Although Smith et al. (1989) appeared to place greater emphasis on the child's behaviour, Ryan-Wenger (1990) stated that the primary criterion for evaluating whether a coping strategy is effective or ineffective should be the child's perception.

Another study which offers a new perspective on pain responses examined children undergoing venipuncture for laboratory work (Lander, Hodgins, & Fowler-Kerry, 1992). These authors suggested that the pain responses exhibited by children may be more complex than the traditional dichotomy of repressors and sensitizers. Four patterns of behaviours were identified in relation to how children anticipate, experience and recall the nocuous stimulus. These patterns were labelled denial, over-reaction, realism, and irrelevance.

A type of ineffective or non-coping which is occasionally discussed within the literature is "catastrophizing" (Gil, Williams, Keefe, & Beckham, 1990; Brown, O'Keeffe, Sanders, & Baker, 1986). Catastrophizers are defined as those individuals who contemplate the worst possible scenario by focusing upon and exaggerating the negative

aspects of the stressor (Spanos, Jones, Brown, & Horner, 1983). In a sample of 457 children between the age of 8 to 18 years, Brown et al. (1986) classified 64% as catastrophizers based on their response to two imagined and one recent personal stressors. Such a high ratio of noncopers is cause for concern. Further investigation is needed to sort out the various factors which impact on children's coping and how they interrelate.

Gender. There is some evidence that boys may be more vulnerable to the negative effects of stress than girls (Trad & Greenbalt, 1990; Turkel & Spencer, 1990; Pellegrini, 1991). Gender-related differences may ensue from learned sex-role behaviours, parents' expectations, or sex-linked temperament and biological differences (Lambert, 1984; Lutz, 1986; Trad & Greenbalt, 1990). In a review of the literature, Lavigne et al. (1986) observed that girls tend to cry, cling, and seek comfort when faced with a painful procedure, while boys employ more stalling tactics. This finding suggests that girls seek help in coping while boys attempt to "tough it out" on their own.

Parents' expectations regarding what is appropriate behaviour for their child may also generate gender differences. Reissland (1983) observed that parents tend to express more concern regarding their daughter's ability to cope with stressors encountered during hospitalization, and tend to provide them with more support. For example, she reported that 52% of parents roomed-in with their daughters while only 28% stayed with their sons. Dise-Lewis (1988), in a study of older children, observed that parents were more accurate in detecting signs of stress in their daughters than in their sons.

These gender-induced differences in coping may also be the result of sex-linked temperament or biological factors which increase vulnerability to stressors (Eme, 1979, cited in Trad & Greenbalt, 1990). In a study of 681 young healthy teens, girls tended to have higher mean stress scores than boys, and to utilize stress-recognition more often as a form of coping (Dise-Lewis, 1988). In another study involving 130 healthy school-aged children, no evidence of gender difference in the use of coping strategies was found, although the researchers did note that girls used more emotions-regulating strategies to deal with academic stressors (Compas et al., 1988). Browne et al. (1986) also found no gender differences in the prevalence of coping and catastrophizing.

To assess how school-aged children actually deal with pain, Tesler et al. (1981) interviewed 214 children in the school and hospital settings. They found that girls tended to identify more coping strategies regarding how they would and did manage pain than boys. Once again, caution is advised in equating effective coping with the number of coping strategies reported. Gender was not found to be a significant factor in the coping styles or distress behaviours employed by a group of 43 paediatric cancer patients

undergoing their first bone marrow aspiration (Hubert et al., 1988). These conflicting findings may be related to the type of instrument used to evaluate coping. Tesler et al. (1981) used children's self-reports while Hubert et al. (1988) used a behaviour observation tool. Fowler-Kerry and Lander (1991) proposed that several assessment scales are gender biased, which may account for some of the differences reported in the literature.

Temperament. At an early age, children exhibit distinct personality traits. Theories dealing with temperament propose that individuals have relatively consistent patterns of thinking, behaving, and reacting which tend to emerge during novel or difficult times (Chess, & Thomas, 1985). Three general categories have been proposed to classify children's temperament: easy, difficult and slow to warm-up. It has been suggested that temperament may serve as a buffer in moderating children's responses to stressful life events (Melamed, Siegel, & Ridley-Johnson, 1988). Qualities such as emotional flexibility and positive emotional outlook are critical determinants in how children respond to stress (Schechter, Bernstein, Beck, Hart, & Scherzer, 1991; Trad & Greenblatt, 1990).

In a study of 75 school-age children, temperament was observed to account for more than 50% of the variance in children's behaviour to unplanned hospitalization (McClowry, 1990). Similar findings were observed by Carson et al. (1991), who reported that children possessing an easier temperament adjusted more effectively to surgery and hospitalization than did those manifesting more difficult or slow to warm-up traits.

Temperament may also influence the care received by children during hospitalization. In a study of 31 children admitted for elective surgery, Wallace (1989) observed that children's temperament or patterns of behaviour significantly affected the amount of analgesic which the children received (Wallace, 1989). Children who exhibited high intensity reactions received significantly more analgesic than children who internalized their discomfort. This study exemplifies how the undertreatment of children's pain can occur, and the crucial role that the health care provider's perceptions play in the child's pain experience. Unfortunately, research has demonstrated that clinicians tend to be inaccurate in their assessment of children in pain (Champion et al., 1991; McCrory, 1991).

Past Experience. Memories of past pain influence how one responds to subsequent experiences (Geach, 1987; Philips, 1987). In a study of the coping behaviours used by 208 hospitalized preschoolers, Ritchie et al. (1988) observed that chronically-ill

children used more coping behaviours in high-stress events than acutely-ill children, but fewer in low-stress situations. This finding suggests that children may find it easier to handle and to mobilize coping strategies against a familiar stressor than an unknown one.

Past stressors effectively handled by the child will have a positive influence on how he/she approaches similar situations in the future. Confidence in one's ability to affect or control one's environment enhances self-esteem and is a protective factor against stress (Trad & Greenbalt, 1990). A sense of efficacy has been reported as a major factor in favouring resilience in children experiencing stressful situations (Bennet-Branson, & Craig, 1991; Cowen, Work, Hightower, Wyman, Parker, & Lotyczewski, 1991; LaMontagne & Hepworth, 1991). However research with adults has suggested that this confidence in one's ability to handle a situation can be jeopardized by one bad experience (Arntz & Lousberg, 1990).

Broome (1986), in her study of cancer children during lumbar punctures, found that, in order to reduce distress behaviours, children needed step-by-step information on each encounter with the procedure. Based on this finding, one could assume that children are unable to spontaneously initiate coping strategies when confronting high-stress situations. The fear and anxiety generated by a situation may play a significant role in the child's ability to handle a stressor regardless of whether it is familiar or novel.

Emotions. Broome (1986) in a study of 128 children, aged 4 to 7 years, during periods of low and high stress observed that children with higher levels of fear demonstrate more negative behaviours. She proposed that these behaviours were evidence of ineffective coping. Fradet, McGrath, Kay, Adams, and Luke (1990), in a prospective study of 171 children during blood tests, suggested that in relation to procedural pain children's anticipatory anxiety parallels how they report and respond to the nocuous stimuli. They postulated that this direct relationship between anxiety, self-reporting of pain, and behaviour might not be evident in situations of post-operative or chronic pain as the child has more opportunity to prepare and mobilize his/her powers of self-control.

Other Intrinsic Factors. Other extraneous factors specific to the individual may influence how children deal with a stressful situation. For example, intelligence and self-esteem have been identified as contributing factors. It has been proposed that higher intelligence (i.e., IQ score) helps to insulate children from the effects of stress in general (Pellegrini, 1991). Other unidentified variables may confound attempts to unravel the mystery of how children cope with pain.

Extrinsic Factors

Rutter (1987) emphasized the dynamic quality of coping in terms of its interactive and contextual nature (cited in Kimchi, & Schaffner, 1990). Lazarus and Folkman (1984) also emphasized the importance of environmental factors in the coping process. When examining factors which impact on children's ability to cope with a nocuous stimulus, it is important to consider factors which are environmentally-induced. Perhaps the most important extrinsic force which impacts on the child is the family for it is in this context that most of a child's early learning takes place.

Social Learning and Modelling. In the context of their family and culture, children learn what behaviours are acceptable when in pain, and the appropriate actions to take (Abu-Saad, 1981). Craig (1975) purposed that children learn pain behaviours through observation and modelling. Due to the role that socialization plays in the development of pain beliefs and behaviours, Craig and Wyckoff (1987) postulated that cultural variations in coping also exist (citied in Branson & Craig, 1988). Ost (1991) observed that 26% of subjects with blood and injection phobias ascribed their condition to modelling experiences. In a previous study, he found that 61% of subjects reported having first-degree relatives with the same fear (cited in Ost, 1991). Much of what children learn about appropriate pain responses may be a result of their observations. In their study of school-aged children, Ross and Ross (1984) reported that parents actively discouraged children from discussing painful events; thereby, impeding their learning about the causality of and coping with pain. This practice may inhibit children from learning positive pain coping responses.

Family Dynamics. The warmth and sense of control that a child derives from a secure and supportive family environment creates a powerful, protective aura around the child (Pellegrini, 1991; Trad & Greenblatt, 1990). One factor within the family milieu which appears to impact on children's coping responses is the disciplinary style employed by the primary caretaker. In a study of 138 children during immunization, Broome and Endsley (1989 (b)) found that authoritative parents who exhibited high warmth and high contact had children who exhibited less distress during stressful situations. More distress behaviours were demonstrated by the children of authoritarian, permissive or unresponsive parents, regardless of whether the parent was actually present during the procedure. Although Pellegrini (1991) reported similar findings, she reported that this quality of parenting only altered the resilience of girls.

Stressor Specific. Lazarus and Folkman (1984) proposed that the coping process

alters in response to changes which transpire in the nature of the stressful event. The nature, duration and intensity of the stressor is a critical factor in coping (Turkel & Spencer, 1990). Children have been observed to exhibit less distress and use more coping behaviours in low-stress situations than in circumstances which generate high-stress (Chess & Thomas, 1985; Ritchie et al, 1988). Studies have also demonstrated that behaviours and coping strategies used by children change in response to the phase of the procedure (Blount, Sturges & Powers, 1990; Ryan, 1989). These findings suggest that cross-situational consistency may not be a characteristic of children's coping processes. Furthermore, environmental factors such as the strange sights, sounds, and smells encountered within the hospital setting may impair the child's natural coping abilities (Barton & Zeanah, 1990; Chess & Thomas, 1985; Lutz, 1986).

Unanticipated events may generate higher levels of stress; thereby, hindering children's attempts to cope (Lutz, 1986; Melamed et al., 1988; Roskies & Bedard, 1975). In two studies which examined children undergoing elective surgery, prehospitalization adjustment was identified as the most powerful predictor of both in-hospital and post-hospitalization adjustment as evaluated by the parent (Carson et al, 1991; Robins, 1987). Although preparation may be an important variable in relation to the coping strategies employed by children undergoing elective as opposed to emergency procedures, Roskies and Bedard (1975) observed that lack of preparation was common to all paediatric admissions to hospital. Parents appear reluctant to inform children of unpleasant events (Harrison, 1991 (a)). The amount of information provided by the parent to the child was negatively correlated with the age of the child and also the parent's perception of the child's level of anxiety (Rasnake & Linscheid, 1989). The timing of this preparation has also been identified as a factor in children's stress and coping behaviours (Faust, Olson, & Rodriguez, 1991). Delays between the provision of information and the occurrence of the stressful event may increase the child's anxiety.

Another factor which influences children's ability to cope is the degree of control which they have over the stressor. Since children frequently have little control during medical procedures, coping strategies such as avoidance or tuning out may actually be more adaptive. Monitoring may be an effective coping strategy, only if the stressor is controllable (Melamed et al., 1982). This may account for Smith et al.'s (1989) finding that repressors who tend to automatically tune-out and sensitizers who received a distraction technique exhibited fewer distress behaviours during an invasive medical procedure, than sensitizers who received information about what was happening.

Caregiver Presence. Controversy still exists regarding the effect of parents' presence on the coping behaviours of children, especially during the performance of

painful procedures (Jacobsen, Manne, Gorfinkle, & Schorr, 1990; Lutz, 1986). In a study of 70 children aged 3 to 10 years of age, children's distress was negatively correlated not only with the child's age, quality of venous access and previous venipunctures, but also the parent's composure regarding the procedure (Jacobsen et al., 1990). Generally, a positive correlation has been reported between maternal state anxiety and the child's anticipation and response to the situation (Broome & Endsley, 1989 (a); Carson et al., 1991; Fradet et al., 1990; Hackworth & McMahon, 1991; Mabe, Treiber, & Riley, 1991). Mabe et al. (1991) postulated that this relationship may be due to factors such as children's use of their parent's emotions as a reference point from which to interpret the event, the modelling by children of their parent's behaviour, parents in distress inability to offer support, or the parent's distress being in response to the child's distress. A vicious cycle may ensue in which the child's anxiety increases the anxiety experienced by the parent and visa versa (Broome & Endsley, 1989; Lutz, 1986). It has been suggested that the most appropriate role-models for children regarding medical situations may be moderately anxious mothers (Brophy & Erickson, 1990).

Conflicting findings have been reported regarding the effect of parent's presence on the child's behaviour, during a painful procedure. In a study of 26 children preparing for elective surgery, Faust et al. (1991) found that the mother's presence during preoperative teaching blocked the child's learning of self-coping methods. However Broome and Endsley (1989 (b)) reported that the mother's presence had no significant effect on the child's behaviour during immunization. During venipuncture, Harrison (1991 (a)) also found no significant difference in the behaviour of children due to the presence or absence of parents. She reported that the sex of the parent present also had no effect on the child's behaviour. Conversely, Jacobsen et al. (1990) found that the interactions between the parent and child during venipuncture significantly influenced the distress exhibited by the child. Parents who employed tactics such as bargaining, explanation, or distraction at any point during the procedure had children who displayed more distress. However the authors were unable to identify whether the parent or child's actions occurred first.

A limitation of the majority of these studies is that they base their findings on observation of the child's behaviour. The validity and reliability of such measures has been questioned (Juniper, Addicoat, Champion, Cairns, & Ziegler, 1991; Wong & Baker, 1988). When children report what they perceive to be most beneficial in helping them cope with pain, they most frequently identified the presence of the parent (Jerrett, 1985).

Although studies have suggested that more than 80% of parents want to be with their children during painful procedures (Watt-Watson, 1990), health care providers frequently

request that parents wait outside. When allowed to stay with their children, parents may be unable to offer support to their children due to their own inexperience and emotional response to the situation (Baucher, 1991; Jacobsen et al., 1990). This may account for the observation that few mothers implemented strategies aimed at enhancing their preschooler's adjustment to hospitalization (Caty, Ritchie, & Ellerton, 1989). It would appear that health care providers have a responsibility to not only ask parents if they want to be present, but also to provide guidance to facilitate parents' active participation in assisting their children to cope with the pain induced by medical procedures.

Conclusion

Despite an awareness that many children and adults fear needles and other intrusive procedures (McGrath & Craig, 1989; Ritchie & Ellerton, 1989; Ross & Ross, 1988), little is known about how people learn to cope with these stressors. Since the coping responses learned as a child tend to persist into adulthood, knowledge of the process by which children learn to cope is essential. Although considerable research has been conducted during the last two decades in the area of children's coping, it has generally dealt with stressors other than pain. Nonetheless, the limited research available in this area would suggest that children are knowledgeable and capable of reporting strategies which assist them to cope with pain.

Although the majority of children appear to have an amazing resilience to stress (Kimchi & Schaffner, 1990; Pellegrini, 1990; Werner, 1981), ineffective coping responses can seriously jeopardize future encounters with that or similar stressors. Identifying factors which promote successful adaptation and protect children from the negative effect of stressors has important implications for clinical practice. An awareness of these factors will allow health care providers to effectively assist children to cope with stressful situations, to develop effective coping responses, and to prevent the development of phobic or avoidance behaviours.

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Appendix B

CONSENT

Ways Children Deal with Having Blood Taken

Reason for the Study:

- little is known about how children deal with having blood taken
- I am exploring what children think and do when having blood taken
- it is hoped that the information obtained will allow us to help other children having blood taken

What will take place:

with your child:

- I will talk to your child for about 20 minutes before he/she has the blood test and about 10 minutes after
- I will ask your child some questions before and after he/she has the blood taken
- I will ask your child to tell how he/she is feeling about the blood test.
- I will show your child a drawing of a kid in a waiting room.
- Then I will ask him/her to tell a story about the picture.
- I will tape record your child's story and what he/she says about the blood test
- I am making a tape recording so that later when I look at all children's stories I will know exactly what your child said.
- the blood will be taken the same way as it would if your child was not in this study.
- after your child has had the blood taken I will ask him/her to tell what it was like

with you:

- I will ask you some questions about your child and your family's experience with blood tests
- you will not be tape recorded.

with the information you and your child give:

- what you and your child say will be kept confidential
- some of what your child says may be quoted in articles or talks
- any articles or talks about this study will not name you or your child

You Should Know That:

- you do not have to let your child take part in this study
- your child does not have to agree to be in this study
- your child does not have to answer all questions
- your child can drop out of the study at any time

Questions:

- I will be happy to answer any questions now
- If you have questions later, you can reach me:

Marilyn J. Hodgins
MN Candidate
University of Alberta
Telephone: 492-6250
(Supervisor: Dr. Janice Lander, 492-6317)

****

Date: _____

I have read this form and agree to let my child,
_____, take part in this study.

_____
signature of parent/guardian

I, _____, agree to be in this study

_____
signature of child

If the child is not able to give written consent, I heard him/her agree to take part in this study.

_____
Signature of witness

Appendix C

Guide for Pre-Procedure Interview with Child

Subject No: ____

AUDIO-RECORD INTERVIEW

__(name)__, I would like to ask you a few questions.

1. How old are you? __

2. What grade are you in at school? ___

DO THE STAI-C NOW (specify that subject should focus on how he/she is feeling right now regarding the upcoming blood test)

__(name)__, I'm going to show you a picture of a child (do not specify sex of child until done so by the subject) and ask you some questions. *SHOW PICTURE OF CHILD AWAITING VENIPUNCTURE*

3. What do you think is happening in this picture? ___

4. (ensure subject aware that child in picture is having a blood test) What happens when someone has blood work done? ___

5. How do you think this child feels about having a blood test? ___

6. (Instruct subject on use of VAS) How much pain will the child feel during blood test?

7. What could the child do or think to make it not hurt so much? ___

8. What could the child's parent do to make it not hurt so much? ___

9. What could the lady in picture (health provider) do to make it not hurt so much? ___

10. How much will it hurt when you have blood test done? ____

11. What will you do or think to make it not hurt so much? ___

Appendix D

Fact Sheet

Please tell us about _____
(child's name)

1: What is your child's date of birth:

_____ Year _____ Month _____ Day

2. Why did your child's doctor order blood to be taken, today?

_____

_____

3. Please rate your child's general health and describe any health problem(s):
___ Excellent ___ Very good ___ Good ___ Frequent illness

_____

_____

4. How many times has your child had blood taken from a vein? In answering this question, do not include the times blood was taken by pricking a finger or heel.

____ a) this is the first time
____ b) 1 to 3 times
____ c) 4 to 10 times
____ d) more than 10 times
____ e) don't know

5) Does your child know he/she is having blood taken from a vein, today?

____ a) No
____ b) Yes

6) Suppose that all fear can be represented on a line. At one end of the line is **no fear at all** and at the other end of the line is the **worst fear imaginable**. The amount of fear that any person has can lie anywhere along the line.

Make an **X** on the line below to show how fearful you think your child is about having blood work done, today.

No Fear _____ Worst Fear Imaginable

7) Please list two or three things that parents can do or say to help a child who is worried about having blood taken from a vein:

_____

_____

_____

_____

8) Describe anything that you told your child about having blood taken and things to do to make it not hurt as much:

_____

_____

_____

9) Does anyone in your family have a fear of needles or blood:

_____a) No

_____b) Yes (who)_____

Appendix E

Guide to Post-Procedure Interview with Child

Subject No:_____

AUDIO-RECORD INTERVIEW

1. So was the blood test better or worse than you thought it would be? __

2. Have subject COMPLETE VAS for actual pain experienced.

3. What did you do that helped make it not hurt so much? _____

4. What did your mum/dad do that helped? __

5. What did laboratory technician do that helped? __

6. If you should ever have to have blood taken again, do you think it will be easier or harder? __
   WHY? _____

7. What would you tell a friend who was nervous about having a blood test? __
   (what would you tell him/her to do or think)

THANKS FOR TAKING PART IN THE STUDY

Appendix F

Parent Generated Categories and Subcategories For Helping Anxious Child

CATEGORY	SUBCATEGORIES
SUPPORTING **Involves offering comfort or support.**	Being There. Staying with the child during the procedure. No physical contact is involved. Giving Physical Contact. Supporting through the act of physical contact or touch. Legitimizing Feelings. Acknowledging the child's feelings regarding the procedure. Providing Other Comfort Source Offering an object associated with comfort such as stuffed animals or other toys. Calming. Speaking soothing words to calm the child. No specific information is given regarding the procedure or how to deal with it.

Appendix F contd

CATEGORY	SUBCATEGORY
ALTERING THOUGHTS **Involves efforts to alter child's thoughts regarding the procedure.**	Encouraging Thinking About Something Else. Directing child to think about other things, usually something pleasant. Minimizing. Down-playing negative aspects of procedure. Examples include: minimizing amount of potential pain or duration of the procedure. Encouraging Don't Think. Recommending child stop or block all thoughts about the procedure. Providing Positive Encouragement. Building self-confidence by informing child of ability to cope with the procedure. Encouraging Imagery. Suggesting mental manipulations to transforms some aspect of the procedure. Examples include imaging that the needle is someone pinching or a mosquito.

Appendix F contd

CATEGORY	SUBCATEGORY
DIVERTING ATTENTION **Involves assisting child to use activities aimed at diverting attention from procedure.**	Encouraging Breathing. Asking child to alter breathing pattern (e.g., holding breath and deep breathing). Encouraging Reciting. Encouraging or assisting child to recite some sequence of numbers, words, or letters. Encouraging Reading. Encouraging or assisting child to focus on a book or some type of script. Talking. Communicating verbally to divert child's attention. Encouraging Movement. Encouraging or assisting child in physical activities such as squeezing something. Encouraging Not Looking. Recommending or assisting child not to watch procedure.

Appendix F contd

CATEGORY	SUBCATEGORY
TAKING PART **Involves encouraging or assisting child to assume an active role in the procedure.**	Encouraging Watch. Encouraging child to observe what happens during procedure. Telling Why. Informing child regarding why procedure must be done. Telling How. Informing child regarding how procedure is done. Giving Personal Information. Sharing personal experience with child. Encouraging Taking Control. Encouraging child to exert control over procedure.

Appendix F contd

CATEGORY	SUBCATEGORY
SUBMITTING **Involves recommending child submit passively and be cooperative.**	Advising Don't Move. Telling child not move during the procedure. Advising Do As Told. Telling child to do as instructed by health provider. Advising Grin & Bear It. Recommending that child tough it out. No specific strategies or actions are identified for how to do this. Vague phrases such as "don't worry", "keep calm" or "relax" are given. Perceiving No Problem. Perceiving that child is not anxious about procedure. Therefore, no assistance is needed.

Appendix F contd

CATEGORY	SUBCATEGORY
CATASTROPHIZING **Involves the perception that nothing can be done to lessen the pain experienced by the child. Differs from SUBMITTING due to underlying tone of despair.**	Nothing Helps. Perceiving that nothing will reduce the pain experienced by child.

Appendix F contd

CATEGORY	SUBCATEGORY
ADDITIONAL ROLES **Involves other interventions intended to assist child to cope with procedure.**	Providing Reward. Promoting or rewarding good behaviour by offering something which is valued by the child. Censoring. Controlling the amount or timing of information given to the child. Offering Positive Interaction. Perceiving that the manner or approach used by parent influences child's reaction to procedure. Informing Honestly. Informing child of procedure, honestly.

Appendix G

Responses for What Is Happening In P-CEAN

The nurse is giving him a blood test.
(Girl, 5 years old)

They're taking a little bit of my blood.
(Girl, 5 years old)

Somebody's taking a test. Umm, for the heart.
(Girl, 6 years old)

He putting stuff in the right spots, and he's just standing there.
(Boy, 6 years old)

Doctor's going to take the person's blood pressure.
(Boy, 7 years old)

This kid is very worried that the nurse might give him an injection.
(Boy, 8 years old)

A person has come to get his needle and he feels nervous.
(Girl, 9 years old)

It looks like the nurse is getting ready to give that boy a needle.
(Girl, 9 years old)

Not sure if she is getting ready a needle or doing something with a vial.
(Boy, 9 years old)

The lady's getting ready to take a blood test on him, and he looks a little bit scared.
(Girl, 10 years old)

The boy is looking at the nurse, and he is worried what she is doing.
(Girl, 10 years old)

A girl or a boy who is just about to have some blood taken. And their, they don't look too pleased.
(Girl, 10 years old)

He looks worried. And it looks likes she is getting the needle and the stuff.
(Girl, 11 years old)

Well okay, umm, the boy looks kind of nervous from the look in his eyes and that.
(Girl, 12 years old)

She going to give that person a needle, and maybe this person is scared to go and have a needle.
(Boy, 12 years old)

Appendix H

Responses For How Blood Test Is Done

Yeah, you have a pinch like that. (demonstrates) And it goes in your skin. And you have to put a white thing on it.

(Boy, 5 years old)

Stick a stinger, a needle.

(Girl, 6 years old)

Yeah, the blood test and then [they] poke the needle and [it] drinks blood.

(Boy, 6 years old)

Well, they take the needle, and put the medicine in, and then they put it, and take the needle and poke it in your arm.

(Girl, 7 years old)

They put the needle, and then they put it on the skin and put it down, and then it sucks out some blood.

(Boy, 7 years old)

You prick your finger or else put a needle in your arm.

(Boy, 7 years old)

They, umm, take a needle. They put it in your vein, and take a little bit of blood out, and then but a bandaid on it, and then you get to go home or to go to school.

(Boy, 7 years old)

They do a shock on your arm sometimes. And, at the end they give you a cotton and some tape and they stick it on.

(Boy, 7 years old)

Yeah, it's about when a, the doctor puts ah, a kind of like a little bottle and she sticks in your arm for sixty seconds or something. And she takes your blood and takes it back out and then, umm, she looks at it at, I think it's a microscope or something.

(Boy, 8 years old)

They put a needle in your arm, and then when the blood gets up to the tube they switch tubes until its done, and then, umm, they rub it with some cotton, and hold it for a while, and then put a bandage on it.

(Girl, 9 years old)

You'd sit down in that chair (points to chair in picture). Close that thing to make sure he doesn't run away (point to chair's arm). And she gives you this needle, then straps, I'm not sure if she gets the needle ready or straps this around his arm (points to tourniquet in picture). She gets the needle ready by putting this in there (points to tube and tube holder).

(Boy, 9 years old)

You have a needle, and it takes a little bit of blood out of you. And it doesn't hurt, it just goes for about a minute.

(Boy, 9 years old)

They put a big elastic around your arm, and they tell you to make a fist, and then they poke a needle in, and then they fill up canisters of blood.

(Girl, 10 years old)

They have a needle and a plastic thing. And then they have tubes that they stick in, in the rubber part of the end kind of a vacuum that makes the blood go faster into the tube.

(Girl, 10 years old)

Oh well, whenever I get a blood test done, they tell me to hold my breath and to make a fist. And I look the other way cause I don't like to (pause), you know.

(Girl, 10 years old)

The kid sits down. They tie a rubber band around the muscle so the vein pops out. Then they stick the needle, they get a bottle on the end of the needle, and they stick the needle in your arm and fill the bottle, and the last time they filled two bottles.

(Boy, 11 years old)

They have you sit down, they stick one of those tight things around your arm, and then they sometimes they stick that alcohol stuff or whatever on your arm to rub it and stuff, and then they, I can't remember if they use cotton right after that. And then they try to find the vein, and then they put the needle, they tell you to take a big breath and you take a deep breath in, and they stick it in, and then they take as many tubes as they have to take, and then they take it out and have you push on it or they will do that.

(Boy, 12 years old)

Appendix I

Responses For Why Blood Tests Are Done

To make sure you're safe.

(Girl, 5 years old)

Because if they don't have a blood test they might get sick and won't be able to go to school.

(Girl, 6 years old)

Cause they have to check your blood. Cause then you're not going to be sick.

(Boy, 6 years old)

So they can see how much blood you have.

(Girl, 7 years old)

Then they won't be sick. (Boy, 7 years old)

One reason is that they're checking if your blood is red or green.

(Boy, 7 years old)

To see if there is anything in your blood. Like there could be germs or something that's not suppose to be in there.

(Girl, 8 years old)

To look for chemicals or something.

(Boy, 8 years old)

Because when I was a kid, like we both have thalassaemia amenia minor right. And when I was a kid, I use to get like really droopy because I didn't get enough iron. So they're going to see if I have enough iron in my blood cause lately I'm kind of droopy. Not really awake all the time.

(Boy, 11 years old)

Well they are probably checking for, umm, diseases or high cholesterol or something.

(Girl, 12 years old)

Appendix J

Responses for How P-CEAN Child Feels About Blood Test

I don't really know. Terrible. Because, I don't like needles that much. Somebody gave me a blood test when I didn't really want one, that wasn't nice.
(Boy, 4 years old)

Happy. Cause it is fun having a blood test done.
(Boy, 5 years old)

Happy. Cause he likes to feel well.
(Girl, 5 years old)

Sad. Cause she doesn't want a needle.
(Girl, 5 years old)

Worried. Cause she thinks it is going to go right through.
(Girl, 5 years old)

A little bit sad and a little bit happy. (prompt: "why sad") Cause it might hurt a little bit. (prompt: "why happy") Because it didn't hurt very much.
(Boy, 6 years old)

Scared. Oh, cause she's never had one maybe. You don't know what is going to happen.
(Girl, 7 years old)

Real upset. I can tell by the look on his face. Cause he hasn't had one ever. That they might have a giant needle.
(Boy, 7 years old)

Scared. Because she watches the needle and she doesn't like watching the blood come out of her body.
(Girl, 10 years old)

Sort of scared. Scared cause it might hurt.

(Girl, 10 years old)

Not very sure. Cause she sort of has like a worried look on her face. Well, because she might not know how it feels, or she might be worried that she might have some type of problems or something.

(Girl, 11 years old)

Kind of nervous. To see her doing all that stuff with the needle.

(Boy, 11 years old)

He looks worried. Cause he's not sure whether it will hurt or not.

(Boy, 11 years old)

Probably nervous if he's not had it done before. Cause they're needles, they're not like nice, they're pointy and sharp.

(Boy, 12 years old)

Appendix K

Responses For Strategies P-CEAN Child Could Use

Hold hands with mum or dad. Try not to look at it. Make a fist.
(Girl, 5 years old)

SUPPORTING: *Seeking Physical Contact*
DIVERTING ATTENTION: *Not Looking*
Moving

Be brave. Stay still.

(Girl, 5 years old)

SUBMITTING: *Grinning & Bearing It*
Not Moving

He could just look at it.

(Girl, 6 years old)

TAKING PART: *Watching*

Try not to cry.

(Girl, 7 years old)

SUBMITTING: *Grinning & Bearing It*

Think about good things. Like him and his mum riding bikes. That he is having ice cream. Just close his eyes and dream of something else.
(Boy, 7 years old)

ALTERING THOUGHTS: *Thinking Something Else*
DIVERTING ATTENTION: *Not Looking*

Hold his breath. Say ouch three times. Look the other way.

(Boy, 7 years old)

DIVERTING ATTENTION: *Breathing*
Reciting
Not Looking

Run away.

(Boy, 8 years old)
CATASTROPHIZING: *Escaping*

If they're planning a holiday, like somewhere he really wants to go, he could think of that. Or something that he's already done, or his friends or something like that. Umm, well he could just have faith in himself, like think, just say it's not going to hurt and then it won't hurt as much.

(Girl, 8 years old)

ALTERING THOUGHTS: *Thinking Something Else*
Positive Self Talk
Minimizing

Think it's just like a pinch or something, or a mosquito bite. Umm, have somebody talking to him.

(Girl, 10 years old)

ALTERING THOUGHTS: *Imagery*
DIVERTING ATTENTION: *Talking*

A few things. One, I find that it helps that you don't look at the needle. Yupe, like look the other way. And umm, the other thing is wiggle your fingers sometimes helps. Don't try and concentrate on it. I don't know, I just look around the room like there is nothing really happening.

(Boy, 11 years old)

DIVERTING ATTENTION: *Not Looking*
Moving
ALTERING THOUGHTS: *Not Thinking*

Freeze his arm.

(Boy, 11 years old)

CATASTROPHIZING: *Anesthetizing*

Tranquilizers. Hold his mum's hand.

(Boy, 11 years old)

CATASTROPHIZING: *Anesthetizing*
SUPPORTING: *Seeking Physical Contact*

He could talk to his parents or a friend like that. He could talk. Look the other way. Or what I usually do is say ouch three times. And close my eyes and hold my breath.

(Girl, 12 years old)
DIVERTING ATTENTION: *Talking*
Not Looking
Reciting
Breathing

Appendix L

Responses For Strategies Subjects Propose To Use

Take it right out. Just get out of this place.
(Girl, 5 years old)

CATASTROPHIZING: *Escaping*

Let my mum give me cough medicine, and Tylenol, and medicine.
(Girl, 5 years old)

ACTIONS INVOLVING OTHERS: *Seeking Healing*

Be brave.
(Girl, 5 years old)

SUBMITTING: *Grinning & Bearing It*

I'm going to hold my mum's hand, and close my eyes, and hold my breath.
(Girl, 5 years old)

SUPPORTING: *Seeking Physical Contact*
DIVERTING ATTENTION: *Not Looking*
Breathing

I just look at it.
(Girl, 6 years old)

TAKING PART: *Watching*

I'm going to close my eyes and dream of something else. Umm, having an ice cream with my mother. Strawberry.
(Boy, 7 years old)

DIVERTING ATTENTION: *Not Looking*
ALTERING THOUGHTS: *Thinking Something Else*

I just watch her. Well it only hurts a sec when she puts it in. But after that three seconds, it doesn't hurt anymore.

(Boy, 8 years old)
TAKING PART: *Watching*
ALTERING THOUGHTS: *Minimizing*

Well if there are two people I'm going to talk. I could tell them that I'm going to Vancouver. I could ask some questions like have you ever been like to Disney Land or somewhere? I could think of something good and I could not look at it.

(Girl, 9 years old)

DIVERTING ATTENTION: *Talking*
Not Looking
ALTERING THOUGHTS: *Thinking Something Else*

Not look and keep calm. Just stay still and not really worry about it.

(Boy, 9 years old)

DIVERTING ATTENTION: *Not Looking*
SUBMITTING: *Grinning & Bearing It*
Not Moving

They should take it in this arm (points to left arm) as better.

(Girl, 10 years old)

TAKING PART: *Controlling*

Well, I usually just look away and take a really deep breath. Sometimes I hold my mum's hand like if I'm really scared.

(Girl, 10 years old)

DIVERTING ATTENTION: *Not Looking*
Breathing
SUPPORTING: *Seeking Physical Contact*

I usually cry a little bit because I get tensed up and so they don't get too much blood. I'll try today, but I'm not sure. I'm just going to, let my blood go up and do stuff to forget about it.

(Girl, 11 years old)

CATASTROPHIZING: *Crying*
ALTERING THOUGHT: *Not Thinking*

I usually squeeze my pants with the other hand.

(Girl, 12 years old)

DIVERTING ATTENTION: *Moving*

Well like I said, I just pretend that the end of the needle is just like the end of the spoon and that someone is just poking me.

(Boy, 12 years old)

ALTERING THOUGHTS: *Imagery*

Appendix M

Responses For How Parent Could Help P-CEAN Child

She holded my hand.

(Girl, 5 years old)

SUPPORTING: *Seeking Physical Contact*

Yeah. Take the needle out. Umm, just say "my child doesn't want to get a needle.

(Girl, 5 years old)

ACTIONS INVOLVING OTHERS: *Seeking a Saviour*

Give him medicine. Give him Tylenol.

(Girl, 5 years old)

ACTIONS INVOLVING OTHERS: *Seeking Healing*

Let him have a toy to hold.

(Girl, 6 years old)

SUPPORTING: *Seeking Other Comfort Source*

Maybe stay with him. I think the kid will get more scareder [scared] when his mum's not there.

(Girl, 7 years old)

SUPPORTING: *Wanting Someone There*

Talk to him. Talk to him about nice things and stuff, about what their next trip is going to be about and stuff.

(Girl, 8 years old)

DIVERTING ATTENTION: *Talking*
ALTERING THOUGHTS: *Thinking Something Else*

Say, umm, he doesn't want the needle done. He doesn't want the needle done so leave him alone. They could tell him "sit down and just relax and just pretend it is not happening".

(Boy, 9 years old)
ACTIONS INVOLVING OTHERS: *Seeking a Saviour*
ALTERING THOUGHTS: *Not Thinking*

They can give her a treat after if it hurted her and all that, give her a treat after to make her feel better.

(Girl, 11 years old)

ACTIONS INVOLVING OTHERS:*Seeking Reward*

Talk to her I guess. About the blood test, what they are going to do; and to make her feel a bit better.

(Girl, 11 years old)

TAKING PART: *Learning How*

Well, for little kids especially they could, the parent could hold their hand, especially if it is their first time. Encourage the child.

(Boy, 12 years old)

SUPPORTING: *Seeking Physical Contact*
Wanting Calming

Appendix N

Responses For How Health Provider
Could Help P-CEAN Child

Say it's not going to hurt.

(Girl, 6 years old)

ALTERING THOUGHTS: *Minimizing*

Just tell her to sit still and look at her mum.

(Girl, 7 years old)

SUBMITTING: *Not Moving*
DIVERTING ATTENTION: *Not Looking*

Make it not hurt. Give him a special needle that doesn't hurt.

(Boy, 5 years old)

ACTIONS INVOLVING OTHERS: *Seeking Clinical Proficiency*

She could sort of make it more fun for him. She could sort of make him laugh or do something like that. Sort of tell him that it is not going to hurt *that* much, it's just going to hurt a little bit.

(Boy, 7 years old)

ACTIONS INVOLVING OTHERS: *Seeking Friendly Interaction*
ALTERING THOUGHTS: *Minimizing*

Maybe, tell him some stuff. Like what will happen and what won't happen.

(Boy, 7 years old)

TAKING PART: *Learning How*

Be more careful. Maybe to be really good at it.
(Girl, 8 years old)

ACTIONS INVOLVING OTHERS: *Seeking Clinical Proficiency*

Don't give him the needle. Say that she was sick and she didn't want to give the blood to give him [the needle], so he could let his mum do it.
(Boy, 8 years old)

ACTIONS INVOLVING OTHERS: *Seeking a Saviour*

She could say there is candy in that jar if you be good.
(Boy, 9 years old)

ACTIONS INVOLVING OTHERS: *Seeking Reward*

Ohh, maybe if she had a teddy bear or something that she could let them use.
(Girl, 10 years old)

SUPPORTING: *Seeking Other Comfort Source*

Put some medicine on it. She can talk to her, like make her change subjects sort of like to make her feel better.
(Girl, 11 years old)

ACTIONS INVOLVING OTHERS: *Seeking Healing Measures*
DIVERTING ATTENTION: *Talking*
ALTERING THOUGHTS: *Thinking Something Else*

She could always, she could always say well that I've got lots of kids that come in here and they are really scared but after they come out they're not cause it is very simple.
(Boy, 10 years old)

TAKING PART: *Learning*
ALTERING THOUGHTS: *Minimizing*

Well I find it easier when they tell me when they are going to stick it in. Or like it is easier period when nurses and doctors tell you what they are doing and when they are going to do it. Or at least explain what they are doing.
(Boy, 12 years old)

TAKING PART: *Learning How*

Appendix O

Responses For Strategies Used During The Blood Test

Yeah. Hold mum's hand and your hand. I didn't even shut my eyes. I didn't even take the breaths when she [give] the needle.

(Girl, 5 years old)

SUPPORTING: *Seeking Physical Contact*

I looked at the mobile. And I didn't move.

(Girl, 5 years old)

DIVERTING ATTENTION: *Not Looking*
SUBMITTING: *Not Moving*

What my mum told me. She told me to go ... (demonstrates deep breathing). Looking at you guys.

(Girl, 7 years old)

SUBMITTING: *Doing As Told*
DIVERTING ATTENTION: *Breathing*
Not Looking

Stamp my feet, hold the finger, squeezed it too hard. Looked at the dolphins, looked at the monkey in the car, the truck [pictures on wall].

(Girl, 7 years old)

DIVERTING ATTENTION: *Moving*
Not Looking

I tried to think about it, but it hurt so much I just couldn't do it. I was doing nothing.

(Girl, 7 years old)

CATASTROPHIZING: *Nothing Helps*

I thought of strawberry ice cream. I sort of thought that I was going to *do it* that I was going to be *brave* about it.

(Boy, 7 years old)

ALTERING THOUGHTS: *Thinking Something Else*
Positive Self Talk

Well, I looked to the wall. I started talking a little, and I was thinking of good things like the trip to Vancouver. My birthday coming up.

(Girl, 9 years old)

DIVERTING ATTENTION: *Not Looking*
Talking
ALTERING THOUGHTS: *Thinking Something Else*

I just pretend it was a mosquito.

(Boy, 9 years old)

ALTERING THOUGHTS: *Imagery*

Oh well, I just listen to her [phlebotomist] and tried not to feel the pain. I looked up and I saw that a poster [on the ceiling]: "I need more weekends and less, or I need less weeks and more", or whatever.

(Girl, 11 years old)

ALTERING THOUGHTS: *Not Thinking*
DIVERTING ATTENTION: *Reading*

Appendix P

Responses for What Parent Did That Helped

My mum helped. She was holding me tight.
(Boy, 4 years old)

SUPPORTING: *Seeking Physical Contact*

My mum promised I get to have a treat.
(Girl, 5 years old)

ACTIONS INVOLVING OTHERS: *Seeking Reward*

Sitting on my mummy's lap.
(Girl, 5 years old)

SUPPORTING: *Seeking Physical Contact*

What my mum told me. She told me to go ... (demonstrates deep breathing).
(Girl, 7 years old)

DIVERTING ATTENTION: *Breathing*

Squeezing my mum's hand.
(Girl, 9 years old)

SUPPORTING: *Seeking Physical Contact*
DIVERTING ATTENTION: *Moving*

I was holding my mum's hand. I was just looking at mum.
(Boy, 9 years old)

SUPPORTING: *Seeking Physical Contact*
DIVERTING ATTENTION: *Not Looking*

He [father] kind of made jokes.
(Girl, 10 years old)
DIVERTING ATTENTION: *Talking*

Appendix Q

Responses for How Health Provider Helped

She told me that it wouldn't hurt.

(Girl, 7 years old)
ALTERING THOUGHTS: *Minimizing*

Well, she told me not to look.

(Girl, 7 years old)
DIVERTING ATTENTION: *Not Looking*

Well, she talked to me.

(Girl, 8 years old)
DIVERTING ATTENTION: *Talking*

She told me to take a deep breath.

(Girl, 8 years old)
DIVERTING ATTENTION: *Breathing*

She told me what was going to happen.

(Girl, 10 years old)
TAKING PART: *Learning How*

Well, it helped cause I was talking to her. It helps take your mind off of it, and it was about something that I liked so I can talk about it. You don't concentrate on the pain, you concentrate on something else.

(Boy, 11 years old)

DIVERTING ATTENTION: *Talking*

Well, the one thing that helps when I'm getting a blood test is when they tell me when it is going in. Everytime they do that it helps. Cause then I know when it is going in otherwise I got to look and say "oh now it's going in.

(Boy, 12 years old)

TAKING PART: *Learning How*

Appendix R

Responses Regarding Outcome of Blood Collection

This is the last time I will ever come here.
(Boy, 8 years old)

It was okay. This was my fourth one so I'm kind of use to it.
(Girl, 9 years old)

It was okay this time because we talked before I had the test so it was easier this time.
(Girl, 10 years old)

Well, umm, it kind of pinched like in the beginning, and it was like longer than the other blood tests I've had.
(Girl, 10 years old)

Better. Cause you know what is happening. My answers would be different if this was my first time. First time, you think that [the] needle will go right through arm.
(Girl, 12 years old)

Appendix S

Predictions For Future Blood Collection

Easier, because you do the same thing, that makes it faster.
(Boy, 4 years old)

A little bit less. Cause I've already had one and I know what it feels like.
(Boy, 6 years old)

Easier, because I'll be much older.
(Girl, 7 years old)

Easy. Cause this one was easy.
(Girl, 7 years old)

Well the first time it was pretty bad. Maybe the second time I will feel that it will be easier. You get use to it.
(Girl, 7 years old)

Harder. Because it's the third one.
(Boy, 7 years old)

It would be harder if it was like lots of years past since you did it. You would sort of be the same way that I was now. But if it was just like one month, I would probably be use to it and I probably wouldn't be scared or anything.
(Boy, 7 years old)

It depends who does it cause some people are gentle and some people aren't as gentle.
(Girl, 8 years old)

Harder. Cause next time I won't come in.
(Boy, 8 years old)

Makes it easier. Because when you are getting older and older, you get more blood in your blood veins, or bigger blood veins.

(Boy, 8 years old)

It gets easier and easier. Cause, I find that if you do them like first then like it hurts more, it's more fun or more exciting. But the second time, it's like less. It hurts less, it's not as exciting, not as fun. Cause, like you know what is going to happen. Like the first time you don't know what is going to happen. Like then the second time you know what is going to happen. Like you're prepared. (Boy, 9 years old)

Easy. Cause I've already been through it before and I know I'm not going to die.

(Boy, 9 years old)

If it's on my arm, it will be easier, but if it's on my finger, harder. Because it kind of hurts on your finger.

(Girl, 10 years old)

Easier. Well the last time we had a blood test, I was looking at it. I thought they were going to fill up one bottle then she brought another one out and I was like waiting for it to stop. So I was a little scared then. And I wasn't scared now.

(Girl, 11 years old)

Lord knows. No one knows.

(Boy, 10 years old)

Depends on how many tubes.

(Boy, 10 years old)

Harder. Cause you know what is going to happen.

(Boy, 11 years old)

Easier. Like you're more use to it and you know. Like before I use to cry alot, but know it doesn't hurt that much.

(Boy, 12 years old)

Appendix T

Advice for a Friend Having a Blood Test

Hold her mummy's hand. Take big breaths. Keep your arm still.
(Girl, 5 years old)

SUPPORTING: *Seeking Physical Contact*
DIVERTING ATTENTION: *Breathing*
SUBMITTING: *Not Moving*

I'd tell him, umm, you have to be brave. To hold his arm straight and, umm, not move it.
(Boy, 5 years old)

SUBMITTING: *Grinning & Bearing It*
Not Moving

I'd tell her it didn't hurt. I'd tell her to don't move and look at something else not the blood going in. I got to look at the blood going in, but it didn't hurt.
(Girl, 5 years old)

ALTERING THOUGHTS: *Minimizing*
SUBMITTING: *Not Moving*
DIVERTING ATTENTION: *Not Looking*

Stay calm, and be very good, and just look at the needle.
(Girl, 6 years old)

SUBMITTING: *Grinning & Bearing It*
TAKING PART: *Watching*

That it wouldn't hurt. Look at your mum. And just breath.
(Girl, 7 years old)
ALTERING THOUGHTS: *Minimizing*
DIVERTING ATTENTION: *Not Looking*
Breathing
SUPPORTING: *Wanting Someone There*

That it didn't hurt. Look at the wall, or close your eyes and count to ten.

(Boy, 7 years old)

ALTERING THOUGHTS: *Minimizing*
DIVERTING ATTENTION: *Not Looking*
Reciting

I'd say last time I had a blood test there was a really nice nurse that did it for me and she was gentle, and I'm sure that you will have someone like that too. Well, I'd say the nurse will tell you whatever to do.

(Girl, 8 years old)

TAKING PART: *Learning How*
ACTIONS INVOLVING OTHERS: *Seeking Friendly Interaction*
SUBMITTING: *Doing As Told*

That it is bad. Sit on his mum's lap. Don't go.

(Boy, 8 years old)

CATASTROPHIZING: *Escaping*
SUPPORTING: *Seeking Physical Contact*

Chew gum and kick his legs.

(Boy, 8 years old)

DIVERTING ATTENTION: *Moving*

I would tell him to just like keep calm. Don't worry about it. It will be okay. Just relax, try to relax, do your best to relax. Just pretend it's not happening. Just pretend something else is happening.

(Boy, 9 years old)

SUBMITTING: *Grinning & Bearing It*
ALTERING THOUGHTS: *Not Thinking*

I'd tell them that you know that these people are experienced. If they miss the vein, they aren't very good. And, I use to tell people I get it every month or week you know. They go isn't that bad. I go no. You know, you've got to be confident that it's not going to hurt. And you don't move around as much and say "oops, oh I'm scared and I accidently hit your hand". I usually tell them don't move around as much, and it is just like a little pinch.

(Boy, 10 years old)

ACTIONS INVOLVING OTHERS: *Seeking Clinical Proficiency*
TAKING PART: *Learning How*
SUBMITTING: *Not Moving*
ALTERING THOUGHTS: *Positive Self Talk*
Minimizing

Appendix U

Parents' Responses for General Strategies To Help Anxious Child

Can get a treat afterwards. Can show friends stickers and tell them about experience. It doesn't last that long. Take a deep breath. Don't watch if he doesn't want to.
(Parent, Boy 4 years old)

ADDITIONAL ROLES: *Providing Reward*
ALTERING THOUGHTS: *Minimizing*
DIVERTING ATTENTION: *Encouraging Breathing*
Encouraging Not Looking

Stay positive at all times. Reassure the child. Explain what he is getting done and why.
(Parent, Boy 5 years old)

ADDITIONAL ROLES: *Offering Friendly Interaction*
SUPPORTING: *Calming*
TAKING PART: *Telling Why and How*

I talk with her and tell her what's going on and why. On a bad day, I will put a quarter in her hand to help [her] make a fist, and when it's over she gets to keep it.
(Parent, Girl 5 years old)

TAKING PART: *Telling Why and How*
ADDITIONAL ROLES: *Providing Reward*
DIVERTING ATTENTION: *Encouraging Movement*

I do not believe anything can be done to change the feelings of the child. The best thing to show your child is no extreme emotion. Stay calm, but tell the truth about your own experience.
(Parent, Girl 6 years old)

CATASTROPHIZING: *Nothing Helps*
ADDITIONAL ROLES: *Providing Friendly Interaction*
Informing Honestly
TAKING PART: *Giving Personal Information*

I will be there with you at all times. We can come back later if you're too scared now.
(Parent, Girl 6 years old)

SUPPORTING: *Being There*
TAKING PART: *Encouraging Taking Control*

Mum had lots of blood taken. It will hurt, but only for a few minutes. Let's go for a treat afterwards.
(Parent, Boy 6 years old)

TAKING PART: *Giving Personal Information*
ALTERING THOUGHTS: *Minimizing*
ADDITIONAL ROLES: *Providing Reward*

Tell him what to expect. Let him watch if or when you get blood taken. Be honest, but don't tell him too much. "It's no big deal". Also I don't tell him too far ahead. I'm very matter of fact about it.
(Parent, Boy 8 years old)

TAKING PART: *Giving Personal Information*
ADDITIONAL ROLES: *Informing Honestly*
Censoring
ALTERING THOUGHTS: *Minimizing*

Be with them. Explain what will happen and why it has to happen. Have the child squeeze your hand and watch you, not their arm or the needle.
(Parent, Girl 9 years old)

SUPPORTING: *Being There*
TAKING PART: *Telling How and Why*
DIVERTING ATTENTION: *Encouraging Movement*
Encouraging Not Looking

I can say nothing to make [child] feel good about having blood taken. He doesn't like it!!
(Parent, Boy 9 years old)

CATASTROPHIZING: *Nothing Helps*

Tell him exactly what is going to be done, so they know what to expect. Answer honestly any questions that they ask. Realize the fear and try to help them along the way - to make the experience the best possible.

(Parent, Boy 9 years old)

TAKING PART: *Telling How*
ADDITIONAL ROLES: *Informing Honestly*
SUPPORTING: *Legitimizing Feelings*

Remind him he's had this done before. Let him talk about it.

(Parent, Boy 9 years old)

TAKING PART: *Giving Personal Information*

This is not life threatening. This is not a traumatic situation. Breaking a leg is traumatic, having blood taken is uncomfortable, not a crisis. In other words put it in perspective. Tell them it maybe uncomfortable but not nearly as bad as skinning your knee. Reassure and when all else fails - BRIBE them.

(Parent, Girl 10 years old)

ALTERING THOUGHTS: *Minimizing*
SUPPORTING: *Calming*
ADDITIONAL: *Providing Reward*

Hold my hand and if it hurts squeeze real hard. Let's rate the technician on a scale of 1 to 10. Breathe deep and nod your head when you're ready.

(Parent, Girl 10 years old)

SUPPORTING: *Giving Physical Contact*
DIVERTING ATTENTION: *Encouraging Movement*
Encouraging Breathing
TAKING PART: *Encouraging Taking Control*

Be encouraging, remain positive and happy with them. Go with them if possible. Have them count to ten. Let them squeeze your hand.

(Parent, Boy 12 years old)

ADDITIONAL ROLES: *Offering Positive Interaction*

SUPPORTING: *Giving Physical Contact*
DIVERTING ATTENTION: *Encouraging Reciting EncouragingMovement*

Be honest. It does hurt a bit. If you lie and say it doesn't hurt at all, your child will think that you're a liar and won't trust you. Assure them that the pain is short.

(Parent, Boy 13 years old)

ADDITIONAL ROLES: *Informing Honestly*
ALTERING THOUGHTS: *Minimizing*

Appendix V

Parents' Responses for Information Given To Child Prior to Procedure

It doesn't last that long. Take a deep breath. Don't have to watch if he doesn't want to.
(Parent, Boy 4 years old)

ALTERING THOUGHTS: *Minimizing*
DIVERTING ATTENTION: *Encouraging Breathing*
Encouraging Not Looking

We compare between her cortisone shots and she knows it doesn't hurt as bad.
(Parent, Girl 5 years old)

TAKING PART: *Giving Personal Information*
ALTERING THOUGHTS: *Minimizing*

You cannot change the hurt that is felt. This experience like others are relative to the person.

(Parent, Girl 6 years old)

CATASTROPHIZING: *Nothing Helps*

Nothing, because he hasn't asked yet.
(Parent, Boy 6 years old)

Just don't think about needle.

(Parent, Boy 7 years old)

ALTERING THOUGHTS: *Encouraging Don't Think*

Compared to having your finger caught in a door, the pain is not bad. This test is going to give the doctor information which will help him diagnose any problems which could make you feel ill.

(Parent, Girl 8 years old)

ALTERING THOUGHTS: *Minimizing*
TAKING PART: *Telling Why*

Not much. We came directly here from the doctor's office.
(Parent, Boy 9 years old)

Think about something else. Let him be familiar with a needle and syringe. I'm a nurse and have often brought them home to play with in the bath. The needle ... I've used to take out slivers.

(Parent, Boy 8 years old)

TAKING PART: *Telling How*
ALTERING THOUGHTS: *Encouraging Think Something Else*

[child] has sat with me on numerous occasions when I have had blood work done. About the only thing that makes it easier for her or I is not to watch.
(Parent, Girl 10 years old)

TAKING PART: *Giving Personal Information*
DIVERTING ATTENTION: *Encourage Don't Look*

We didn't talk about blood work today, but I've said "Don't watch and it won't hurt".
(Parent, Boy 10 years old)

DIVERTING ATTENTION: *Encourage Don't Look*
ALTERING THOUGHTS: *Minimizing*

Listen to the technician, and do as she says. Don't look and think about something else.
(Parent, Boy 10 years old)

SUBMITTING: *Advising Do As Told*
DIVERTING ATTENTION: *Encourage Don't Look*
ALTERING THOUGHTS: *Encouraging Think Something Else*

Tell her it is necessary to determine what is wrong with her so doctors can treat her properly. We have found one vein that is easiest and [child] has been told to advise the technician of the vein.

(Parent, Girl 11 years old)

TAKING PART: *Telling Why*
Encouraging Taking Control

Look away from the needle. Count or sing.

(Parent, Girl 11 years old)

DIVERTING ATTENTION: *Encourage Don't Look*
Encouraging Reciting

Appendix W

Additional Information Supplied by Parents Regarding
Actions of Health Providers

I resent labs that do not allow parents to accompany their child - like we can't handle it or our child. Some children do better without their parent but that decision should be the parent's choice, not a lab person who doesn't know him/her.

(Parent, Boy 9 years old)

The calm and caring assurance of lab technicians and the little prize afterward helped our boys a lot.

(Parent, 9 years old)

[My child] was fine before she had an experience where 2 to 3 nurses tried to get blood for approximately a half hour. This was very traumatic and she has been afraid ever since.

(Parent, Girl 11 years old)

My daughter [diabetic sibling] hates it when nurses say "It won't (or doesn't) hurt - she says no-one can assess that and it does hurt and it's better to be open about that and think of coping tactics.

(Parent, Boy 13 years old)

Appendix X

Additional Frequency Tables of The Data

Appendix X: Table 1

Emotion Attached to P-CEAN Child

EMOTION	FREQUENCY	PERCENTAGE
Negative	70	82.4
Positive	8	9.4
Mixed	4	4.7
Don't Know	3	3.5
TOTAL	85	100.0

Missing Data n=1

Appendix X: Table 2

Explanation for Emotion Attached to P-CEAN

	EXPLANATION					
EMOTION	**The Unknown**	**Needle**	**Pain**	**Blood**	**Good ***	**Don't Know** ***
Negative	17	20	26	2	0	(12)
Positive	0	0	2	0	2	(4)
Mixed	1	0	2	0	0	(1)
Don't Know	0	0	0	0	0	(4)
TOTAL	18	20	30	2	2	(21_

*Good: Related to explanations such as "this will help child get better" or "it's okay because child knows what to expect from past experience".

Appendix X: Table 3

Frequencies for Number of Strategies Generated By Subjects for:
P-CEAN Child's Use, Proposed Self Use, Reported Used, and Advice for Friend

	STRATEGIES			
RESPONSES	P-CEAN CHILD	PROPOSED SELF USE	REPORTED AS USED	ADVICE FOR FRIEND
0	15 (17.4%)	14 (16.7%)	9 (10.6%)	7 (8.5%)
1	25 (29.1%)	35 (41.7%)	35 (41.2%)	9 (10.8%)
2	17 (19.8%)	21 (25.0%)	29 (34.1%)	32 (38.6%)
3	19 (22.1%)	12 (14.3%)	11 (12.9%)	20 (24.1%)
4	10 (11.6%)	2 (2.4%)	1 (1.2%)	11 (13.3%)
				4 (4.8%)
TOTAL	86 (100.0%)	84 (100.1%)	85 (100.0%)	83 (100.1%)

Missing Data:
- Proposed Self Use n=2
- Reported As Used n=1
- Advice for Friend n=3

Note: Percentages may vary due to rounding

Appendix X: Table 4

Frequencies for Number of Strategies Generated by Subjects Regarding What: Parent Could Do and Did, and Health Provider Could Do and Did

	STRATEGIES			
RESPONSES	PARENT COULD	HEALTH PROVIDER COULD	PARENT DID	HEALTH PROVIDER DID
0	13 (15.3%)	22 (25.9%)	14 (42.4%)	20 (34.5%)
1	39 (45.9%)	40 (47.1%)	19 (57.6%)	30 (51.7%)
2	22 (25.9%)	16 (18.8%)		6 (10.3%)
3	7 (8.2%)	7 (8.2%)		2 (3.4%)
4	4 (4.7%)			
TOTAL	85 (100.0%)	85 (100.0%)	33 (100.0%)	58 (99.9%)

Missing Data:
- Parent Could n=1
- Health Provider Could n=1
- Parent Did n=53
- Health Provider Did n=28

Percentages may vary due to rounding

Appendix X: Table 5

Frequencies For Number of Responses Generated By Parents For Strategies: Any Parent Could Use and Told to Child Prior to Procedure

	STRATEGIES	
RESPONSES	GENERAL STRATEGIES ANY PARENT COULD USE	STRATEGIES TOLD TO CHILD PRIOR TO THIS PROCEDURE
0		11 (13.8%)
1	11 (13.1%)	23 (28.8%)
2	35 (41.7%)	23 (28.8%)
3	26 (31.0%)	17 (21.2%)
4	9 (10.7%)	5 (6.2%)
5	2 (2.4%)	1 (1.2%)
6	1 (1.2%)	
TOTAL	84 (100.1%)	80 (100.0%)

Missing Data:
- General Strategies n=2
- Strategies Told n=6

Percentages may vary due to rounding